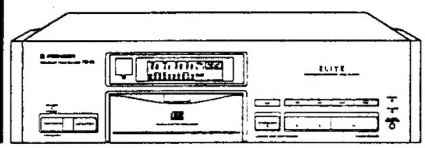
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2516

COMPACT DISC PLAYER

PD-52
PD-S801
PD-S801-G

PD-52, PD-S801 AND PD-S801-G HAVE THE FOLLOWING:

Type	Model			Power Requirement	Remarks
	PD-52	PD-S801	PD-S801-G		
KU	○	–	–	AC120V Only	
KC	–	○	–	AC120V Only	
HEM	–	○	○	AC220 – 230V, 240V (Switchable) *	
HB	–	○	–	AC220 – 230V, 240V (Switchable) *	
SD	–	○	–	AC110V, 120 – 127V, 220V, 240V (Switchable)	

* Change the primary wiring of the power transformer.

- This manual is applicable to the following: PD-52/KU; PD-S801/KC, HEM, HB and SD; PD-S801-G/HEM.
- For the following: PD-S801/KC, HEM, HB and SD, refer to page 76.
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

CONTENTS

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SJ APR. 1992 Printed in Japan

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced. .

1. SAFETY INFORMATION

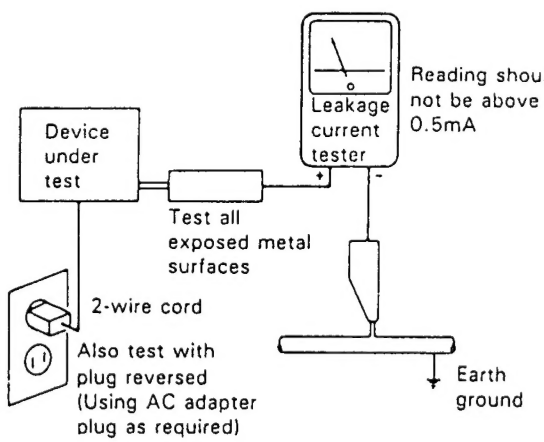
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

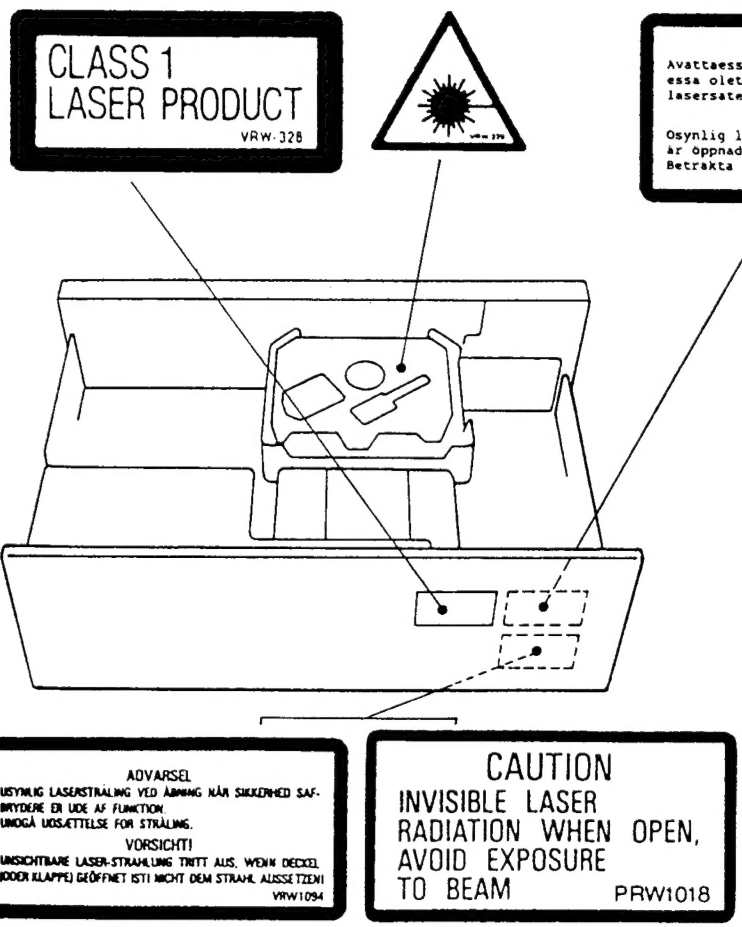
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

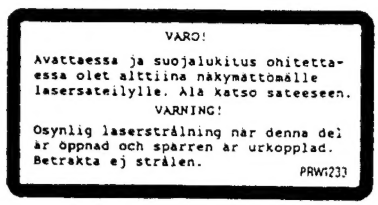
LASER
Picture 1
Warning sign for laser radiation

LABEL CHECK

HEM and HB types



HEM type



HEM type

HB type

Additional Laser Caution

1. Laser Interlock Mechanism
   The position of the switch (S601) for detecting loading completion is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S601) is not in $\overline{\text{CLMP}}$ terminal side (when the mechanism is not clamped and $\overline{\text{CLMP}}$ signal is high level).
   Thus, the interlock will no longer function if the switch (S601) is deliberately set to $\overline{\text{CLMP}}$ terminal side (if $\overline{\text{CLMP}}$ signal is low level).
   In the test mode *, the interlock mechanism will not function.
   Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

* Refer to page 38.

2. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

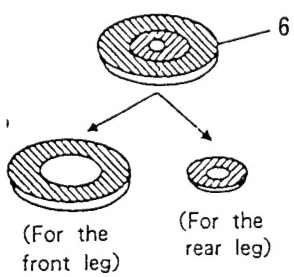
2.1 EXTERIOR

Parts List

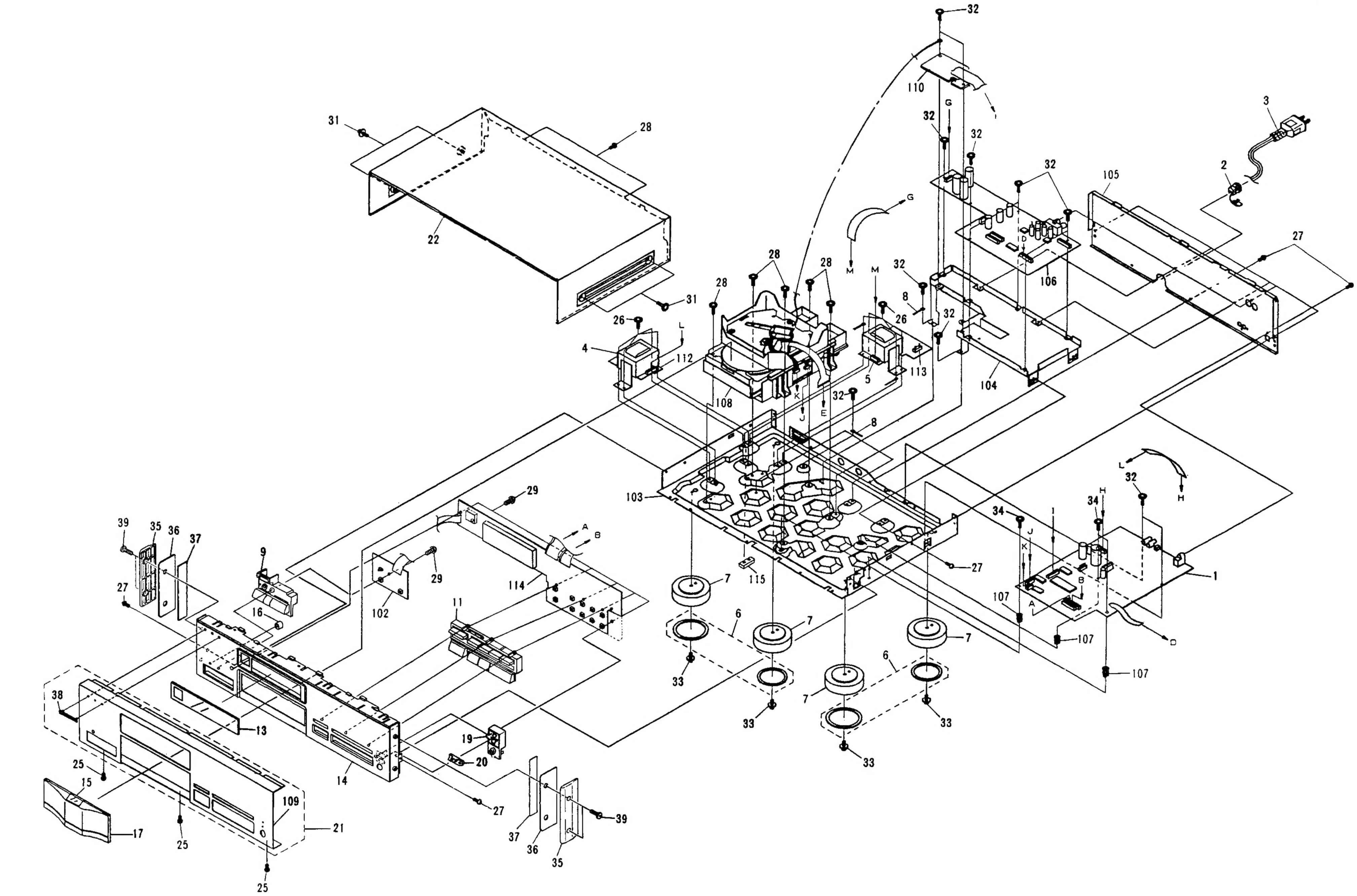
Mark	No.	Description	Part No.
	1	Mother board assembly	PWM1628
⚠	2	Strain relief	CM – 22C
⚠	3	AC power cord	PDG1015
⚠	4	Power transformer (8W)	PTT1270
⚠	5	Power transformer (10W)	PTT1269
	6	Stopper	PNM1134
	7	Insulator	PNW2020
	8	Cord clamper	RNH – 184
	9	Power button	PAC1658
	10	.....	
	11	Play button	PAC1659
	12	.....	
	13	Display window	PAM1576
	14	Control panel	PNW2175
	15	Tray lens	PNW1950
	16	LED lens	PNW2019
	17	Tray panel	PNW1949
	18	.....	
	19	Out put button	PAC1661
	20	Indicator lens	PEA1206
	21	Front panel assembly	PEA1212
	22	Bonnet	PYY1148
	23	.....	
	24	.....	
	25	Screw	BBT30P080FCC
	26	Screw	BBT30P060FCC
	27	Screw	BBZ30P080FCC
	28	Screw	BBZ30P080FCC
	29	Screw	PPZ30P100FMC
	30	.....	
	31	Screw	FBT40P080FZK
	32	Screw	IBZ30P060FCC
	33	Screw	IBZ30P080FCC
	34	Screw	IBZ30P150FCC
	35	Panel stabilizer	PNW2179
	36	Side spacer	PEB1217
	37	Side sheet	PNM1187
	38	Name plate	AAM1001
	39	Screw	PBA1071

Mark	No.	Description	Part No.
NSP	102	SW board assembly	PWZ2361
NSP	103	Under base	PNA1570
NSP	104	Audio angle	PNA1796
NSP	105	Rear base	PNA1834
NSP	106	Audio board assembly	PWZ2362
NSP	107	PCB Spacer	PNY – 404
NSP	108	Loading Mech. assembly	PXA1473
NSP	109	Front panel	PAN1247
NSP	110	RF board assembly	PWZ2394
	111	.....	
NSP	112	Audio trans board assembly	PWZ2364
NSP	113	Servo trans board assembly	PWZ2363
NSP	114	Function board assembly	PWZ2360
NSP	115	Guard spacer	PNM1137

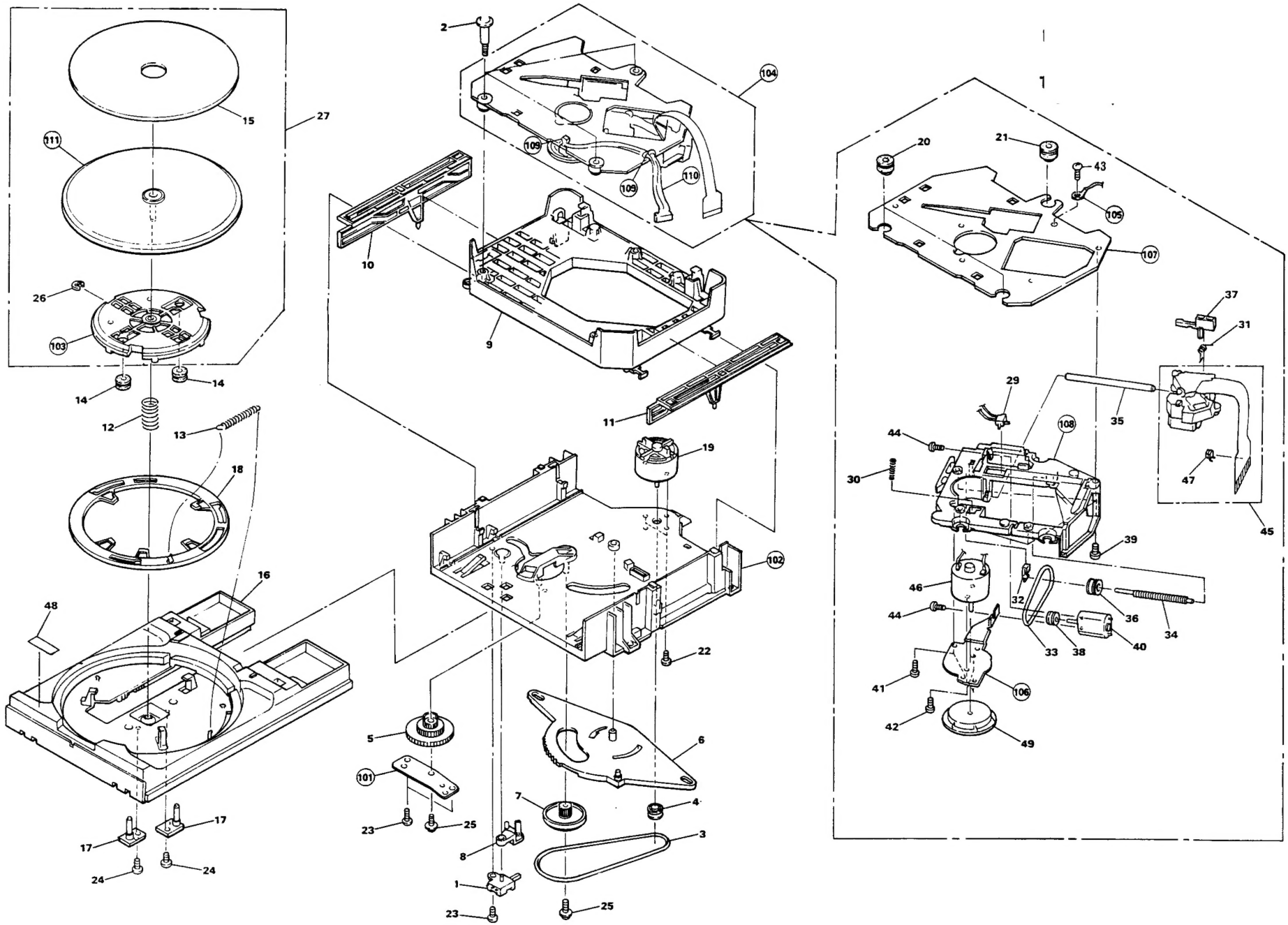
Note : The stopper consist of the big ring part and the small ring part.
If you stik the stopper to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.



Exterior



2.2 MECHANISM SECTION



Parts List of Mechanism section

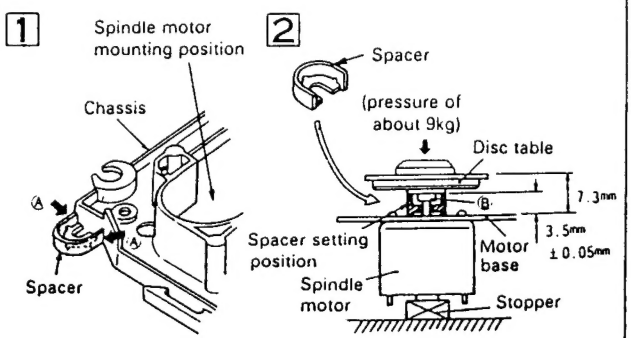
Mark	No.	Description	Parts No.
	1	Lever switch (S601)	DSK1003
	2	Screw(steel)	PBA1027
	3	Rubber belt	PEB1186
	4	Motor pulley	PNW1634
	5	Drive gear	PNW1996
	6	Synchro lever	PNW2168
	7	Gear pulley	PNW1998
	8	SW head	PNW1999
	9	Float base	PNW2000
	10	Left cam	PNW2001
	11	Right cam	PNW2002
	12	Compression spring	PBH1120
	13	Tention spring	PBH1121
	14	Float(rubber)	PEB1014
	15	Table rubber sheet	PEB1181
	16	Tray	PNW2003
	17	Table guide	PNW2004
	18	Lock plate	PNW2005
	19	DC motor(0.75W)	PXM1010
	20	Rubber bush	PEB1031
	21	Rubber bush	PEB1170
	22	Screw	BMZ26P040FMC
	23	Screw	BPZ26P060FMC
	24	Screw	IPZ26P060FCU
	25	Screw	IPZ20P080FMC
	26	Stop ring	YE20S
	27	Turn table assembly	PEA1165
	29	Push switch	DSG1014
	30	Spring	PBH1009
	31	Spring	PBH1084
	32	Plate spring	PBK1057
	33	Belt(square)	PEB1072
	34	Screw	PLA1003
	35	Guide bar	PLA1071
	36	Pulley	PNW1066
	37	Half nut	PNW1605
	38	Motor pulley	PNW1634
	39	Screw	PBZ30P080FMC
	40	DC motor(1.7W)	PXM1013
	41	Screw	BPZ20P080FZK
	42	Screw	JFZ20P025FMC
	43	Screw	PBZ30P060FMC
	44	Screw	PMZ20P030FMC
	45	Pick up assembly	PEA1030
	46	DC motor assembly(With oil)	PEA1156
	47	Semi-fixed VR(3.3K)	PCP1008
	48	Caution label	PRW1244
	49	Disc table	PNW1067
	50	Shaft holder	PNB1382

Mark	No.	Description	Parts No.
	101	.....	
NSP	102	Loading base	PNW1995
NSP	103	Table bearing assembly	PXA1383
NSP	104	Servo mechanism assembly	PXA1472
NSP	105	Cord with plug	XDF – 503
NSP	106	Motor base	PNB1211
NSP	107	Mechanism base assembly	PXA1474
NSP	108	Mechanism chassis	PNW1604
NSP	109	Binder	PEC – 107
NSP	110	Connector assembly	PDE1130
NSP	111	Turn table (AL)	PNR1035

• How to install the disc table

1 Use nippers or other tool to cut the two sections marked Ⓐ in figure 1. Then remove the spacer.

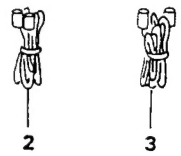
2 While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base (angled so it doesn't touch section Ⓑ), and stick the disc table on top (takes about 9kg pressure). Take off the spacer.

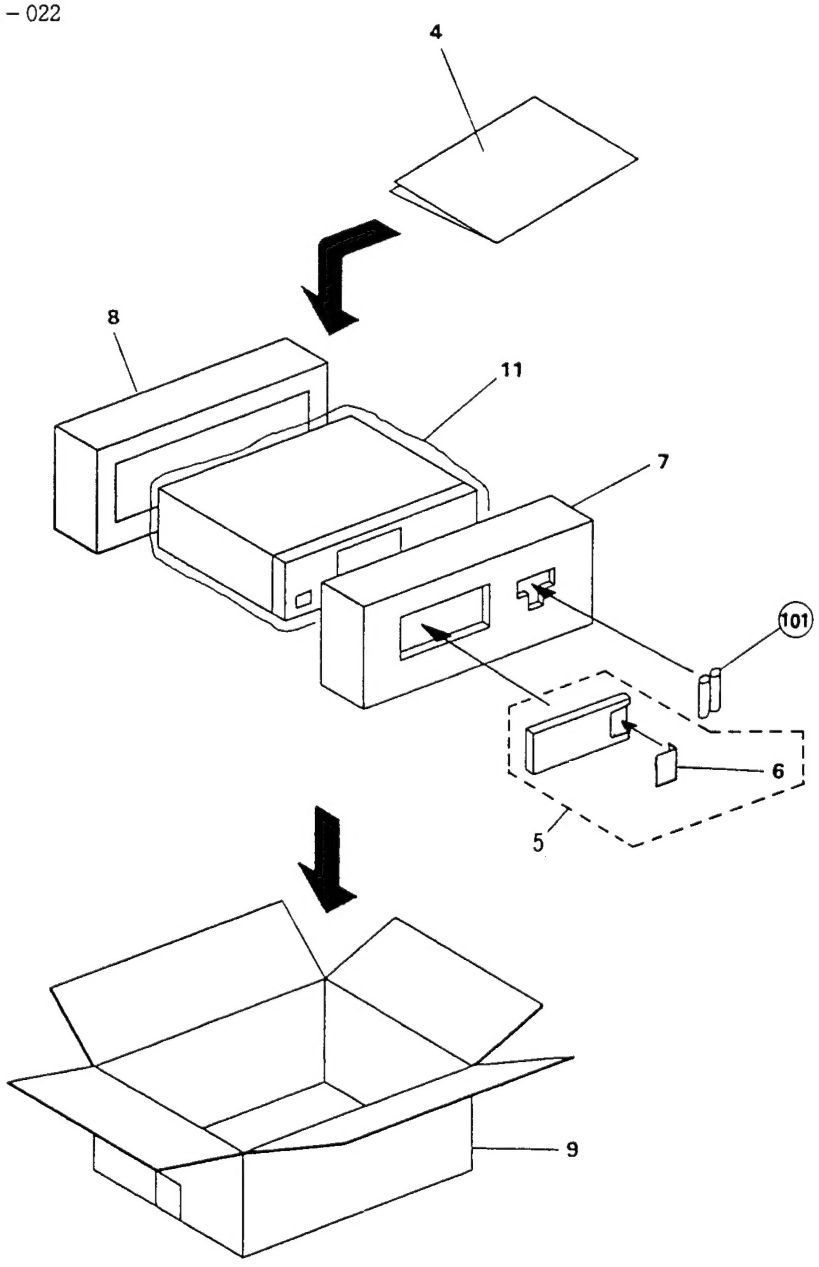


2.3 PACKING

Parts List

Mark	No.	Description	Part No.
	1	.....	
	2	Cord with plug (mini plug)	PDE – 319
	3	Cord with plug	PDE1001
	4	Operating instructions (English)	PRB1170
	5	Remote control unit	PWW1072
	6	Battery lid	PZN1001
	7	Styrol protector F	PHA1204
	8	Styrol protector R	PHA1164
	9	CD packing case	PHG1805
	10	.....	
	11	Sheet	Z23 – 007
NSP	101	Mangan battery (R03, AAA)	VEM – 022





3. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%)

560 Ω → 56 × 10^1 → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10^3 → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10^1 → 5621 ····· RN1/4SR 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
⊙		MOTHER BOARD ASSEMBLY	PWM1628
⊙		SUB BOARD ASSEMBLY	PWX1229
NSP		├FUNCTION BOARD ASSEMBLY	PWZ2360
NSP		├SWITCH BOARD ASSEMBLY	PWZ2361
NSP		└RF BOARD ASSEMBLY	PWZ2394
⊙		ANALOG BOARD ASSEMBLY	PWM1632
NSP		├AUDIO BOARD ASSEMBLY	PWZ2362
NSP		├SERVO TRANS BOARD ASSEMBLY	PWZ2363
NSP		└AUDIO TRANS BOARD ASSEMBLY	PWZ2364
MOTHER BOARD ASSEMBLY			
SEMICONDUCTORS			
⚠	IC20	REGULATOR IC	TA2019P
	IC151	SERVO IC	CXA1372S
⚠	IC201, 202	POWER OP-AMP IC	LA6520
	IC301	EFM DEMODULATION IC	CXD2500AQ
	IC351	MICROCOMPUTER IC	PD4403B
	Q391	TRANSISTOR	2SC1740S
⚠	D11-14	DIODE	11ES2
⚠	D52	DIODE	11ES2
	D54	ZENNER DIODE	MTZJ18B
	D351	DIODE	1SS254
	D361	DIODE	1SS254
	D391-397	DIODE	1SS254
COILS/TRANSFORMERS			
	L351	AXIAL INDUCTOR	LAU010K
	L391, 392	AXIAL INDUCTOR	LAU010K
	L395, 396	AXIAL INDUCTOR	LAU010K
CAPACITORS			
	C11	CERAMIC CAPACITOR	CKCYF103Z50
	C13	CERAMIC CAPACITOR	CKCYF103Z50
	C15, 16	CERAMIC CAPACITOR	CKCYF103Z50
	C25, 26	ELECT. CAPACITOR	CEAS472M16
	C27, 28	ELECT. CAPACITOR	CEAS471M6R3
	C52	ELECT. CAPACITOR	CEAS101M35
	C60	ELECT. CAPACITOR	CEAS010M50
	C151	ELECT. CAPACITOR	CEAS101M10
	C153	ELECT. CAPACITOR	CEAS471M10
	C155	CERAMIC CAPACITOR	CKCYB182K50
	C156	CERAMIC CAPACITOR	CGCYX333K25
	C157	CERAMIC CAPACITOR	CGCYX103K25
	C158, 159	CERAMIC CAPACITOR	CGCYX104K25
	C160	ELECT. CAPACITOR	CEAS4R7M50
	C161	AUDIO FILM CAPACITOR	CFTXA104J50
	C162	ELECT. CAPACITOR	CEAS010M50
	C163	CERAMIC CAPACITOR	CGCYX104K25
	C164	CERAMIC CAPACITOR	CGCYX103K25
	C167	CERAMIC CAPACITOR	CKCYF103Z50
	C168	CERAMIC CAPACITOR	CGCYX333K25
	C169	CERAMIC CAPACITOR	CGCYX103K25
	C170	CERAMIC CAPACITOR	CKCYB332K50
	C171, 172	CERAMIC CAPACITOR	CKCYB472K50
	C205	CERAMIC CAPACITOR	CKCYF103Z50
	C210	CERAMIC CAPACITOR	CGCYX103K25
	C215	CERAMIC CAPACITOR	CGCYX103K25
	C216, 217	ELECT. CAPACITOR	CEAS330M16
	C218	CERAMIC CAPACITOR	CKCYB272K50
	C230	CERAMIC CAPACITOR	CGCYX104K25
	C301	CERAMIC CAPACITOR	CGCYX104K25
	C302	ELECT. CAPACITOR	CEAS471M6R3
	C303	CERAMIC CAPACITOR	CKCYF103Z50
	C306	CERAMIC CAPACITOR	CKCYB152K50
	C307	CERAMIC CAPACITOR	CGCYX473K25
	C308	CERAMIC CAPACITOR	CGCYX103K25
	C309	ELECT. CAPACITOR	CEASR47M50
	C321	AUDIO FILM CAPACITOR	CFTXA104J50
	C322	ELECT. CAPACITOR	CEAS101M10
	C351	ELECT. CAPACITOR	CEAS471M6R3
	C353	CERAMIC CAPACITOR	CKCYF103Z50
RESISTORS			
	R51-53	CARBONFILM RESISTOR	RD1/6PM□□□J
	R153-158	CARBONFILM RESISTOR	RD1/6PM□□□J
	R160	CARBONFILM RESISTOR	RD1/6PM□□□J
	R185, 186	CARBONFILM RESISTOR	RD1/6PM□□□J
	R201	CARBONFILM RESISTOR	RD1/6PM□□□J

Mark	No.	Description	Part No.
	R205, 206	CARBONFILM RESISTOR	RD1/6PM□□□J
	R210	CARBONFILM RESISTOR	RD1/6PM□□□J
	R215, 216	CARBONFILM RESISTOR	RD1/6PM□□□J
	R218	CARBONFILM RESISTOR	RD1/6PM□□□J
	R226-230	CARBONFILM RESISTOR	RD1/6PM□□□J
	R301-312	CARBONFILM RESISTOR	RD1/6PM□□□J
	R319	CARBONFILM RESISTOR	RD1/6PM□□□J
	R321	CARBONFILM RESISTOR	RD1/6PM□□□J
	R355-360	CARBONFILM RESISTOR	RD1/6PM□□□J
	R362-366	CARBONFILM RESISTOR	RD1/6PM□□□J
	R380	RESISTOR ARRAY (47K)	RA12T□□□J
	R391-396	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR151, 152	VR	RCP1046
	OTHERS		
	JA301	OPTICAL OUTPUT JACK	TOTX178
	JA391, 392	JACK/12V	PKN1004
	JA393	JACK	PKN1005
	X351	CERAMIC RESONATOR	VSS1014

FUNCTION BOARD ASSEMBLY

	SEMICONDUCTORS		
	Q701, 702	TRANSISTOR	DTC124ES
	D701-703	DIODE	1SS254
	D712	LED	PCX1023
	D713	LED	PCX1019
	SWITCHES		
	S701-710	SWITCH	PSG1006
	COILS/TRANSFORMERS		
	L701, 702	AXIAL INDUCTOR	LAU010K
	CAPACITORS		
	C701-712	CERAMIC CAPACITOR	CKPUYB181K50
	RESISTORS		
	R701-703	CARBONFILM RESISTOR	RD1/6PM□□□J
	OTHERS		
		REMOTE SENSOR	SBX1610-51
	V701	FL INDICATOR TUBE	PEL1057

SWITCH BOARD ASSEMBLY

	SEMICONDUCTORS		
	D751	LED	PCX1019
	SWITCHES		
	S751, 752	SWITCH	PSG1006

AUDIO BOARD ASSEMBLY

	SEMICONDUCTORS		
	IC801	LOGIC IC	TC74HCU04AP
	IC802	IC	PD0116A
	IC831, 832	D/A CONVERTER IC	PD2028B
	IC854, 855	OP-AMP IC	NJM5532DD
	IC901	REGULATOR IC	NJM7812FA
	IC902	REGULATOR IC	NJM7912FA
	IC903-905	REGULATOR IC	NJM7805FA
	Q801, 802	TRANSISTOR	DTA124ES
	Q803	TRANSISTOR	DTC124ES
	Q831, 832	TRANSISTOR	DTA124ES
	Q833, 834	TRANSISTOR	DTC124ES
	Q839-844	TRANSISTOR	2SC3068
	D801	DIODE	1SS254
	D831-834	DIODE	1SS254
⚠	D901-908	DIODE	11ES2
	CAPACITORS		
	C801	CERAMIC CAPACITOR	CFTXA103J50
	C803	ELECT. CAPACITOR	CEAS471M6R3
	C806, 807	CERAMIC CAPACITOR	CCCCH120J50
	C810	CERAMIC CAPACITOR	CGCYX473K25
	C811	CERAMIC CAPACITOR	CKCYB102K50
	C813	ELECT. CAPACITOR	CEAS471M6R3
	C821	AUDIO FILM CAPACITOR	CFTXA473J50
	C835, 836	CERAMIC CAPACITOR	CKCYF103Z50
	C837, 838	AUDIO FILM CAPACITOR	CFTXA104J50
	C839-842	ELECT. CAPACITOR	CEAS471M6R3
	C843-846	AUDIO FILM CAPACITOR	CFTXA104J50
	C847, 848	ELECT. CAPACITOR	CEAS471M6R3
	C849-854	AUDIO FILM CAPACITOR	CFTXA104J50
	C855-860	ELECT. CAPACITOR	CEAS471M6R3
	C861-864	CERAMIC CAPACITOR	CCCSL181J50
	C865-868	CERAMIC CAPACITOR	CCCCH330J50
	C869-872	CERAMIC CAPACITOR	CCCCH470J50
	C873, 874	AUDIO FILM CAPACITOR	CFTXA683J50
	C875, 876		CFTXA562J50
	C877, 878		CFTXA681J50
	C879-882	ELECT. CAPACITOR	CEAS221M25
	C883, 884	ELECT. CAPACITOR	CEAS470M50
	C885, 886	PL. STYRENE CAPACITOR	CQSF102J50
	C887, 888	ELECT. CAPACITOR	CEAS4R7M50
	C890	CERAMIC CAPACITOR	CKCYF103Z50
	C891, 892	AUDIO FILM CAPACITOR	CFTXA103J50
	C901-903	CERAMIC CAPACITOR	CKCYF103Z50
	C904, 905	ELECT. CAPACITOR	CEAS102M25
	C906	ELECT. CAPACITOR	CEAS332M16
	C909, 910	ELECT. CAPACITOR	CEAS471M16
	C911-913	ELECT. CAPACITOR	CEAS102M16
	C914-916	CERAMIC CAPACITOR	CKCYF103Z50
	RESISTORS		
	R801-807	CARBONFILM RESISTOR	RD1/6PM□□□J
	R809, 810	CARBONFILM RESISTOR	RD1/6PM□□□J
	R813-817	CARBONFILM RESISTOR	RD1/6PM□□□J
	R821-824	CARBONFILM RESISTOR	RD1/6PM□□□J
	R833-886	CARBONFILM RESISTOR	RD1/6PM□□□J
	R890-893	CARBONFILM RESISTOR	RD1/6PM□□□J
	R901-903	CARBONFILM RESISTOR	RD1/6PM□□□J
	OTHERS		
	JA801	JACK	PKB1010
	X801	XTAL RES (OSC)	PSS1006

Mark	No.	Description	Part No.

AUDIO TRANS BOARD ASSEMBLY

OTHERS

⚠	TERMINAL	RKC-061

RF BOARD ASSEMBLY

SEMICONDUCTORS

	IC101 PRE AMP IC	CXA1471S
	Q101 TRANSISTOR	2SA854S

CAPACITORS

	C101, 102 ELECT. CAPACITOR	CEAS471M6R3
	C103 CERAMIC CAPACITOR	CCCCH200J50
	C104 ELECT. CAPACITOR	CEAS101M10
	C110 CERAMIC CAPACITOR	CKCYF103Z50
	C120 CERAMIC CAPACITOR	CGCYX104K25

RESISTORS

	R101-110 CARBONFILM RESISTOR	RD1/6PM□□□J
	VR102 VR	RCP1046
	VR103 VR	RCP1044

OTHERS

	CN101 CONNECTOR	52045-1610

4. DISASSEMBLY

4.1 REMOVE THE TRAY PANEL AND THE TRAY LENS

Hold the tray panel with your hands as the figure shown right, and grasp the tray with your thumbs and then lift the tray panel up while pulling it toward you with the other fingers.(Figs . 1 and 2)

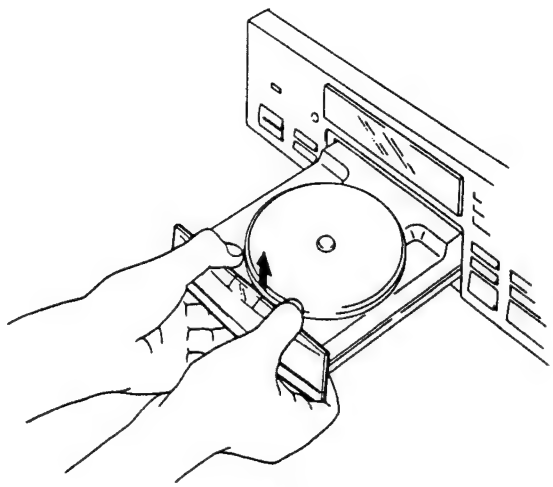


Fig. 1

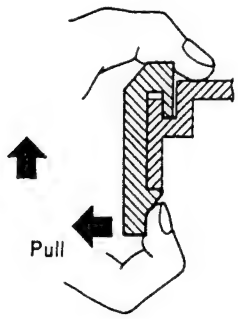


Fig. 2

4.2 INSTALL THE TRAY PANEL AND THE TRAY LENS

Align the tray panel with the grooves located at both edges of the tray while holding the tray lens with you fingers, and then press it down till it stops. (Fig. 3)

Hold the tray panel and the tray as shown in Fig. 4 and slide them down till you hear a click sound while pressing strongly with your thumbs. (Figs. 4 and 5)

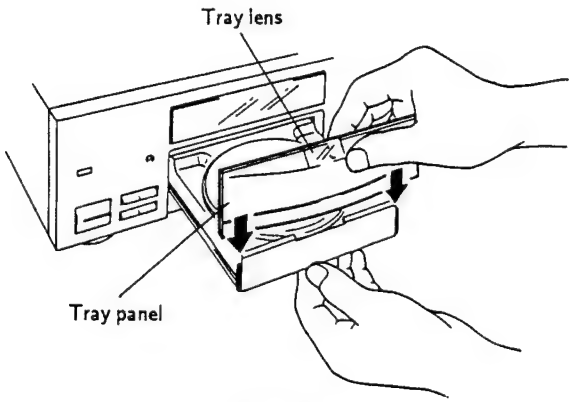


Fig. 3

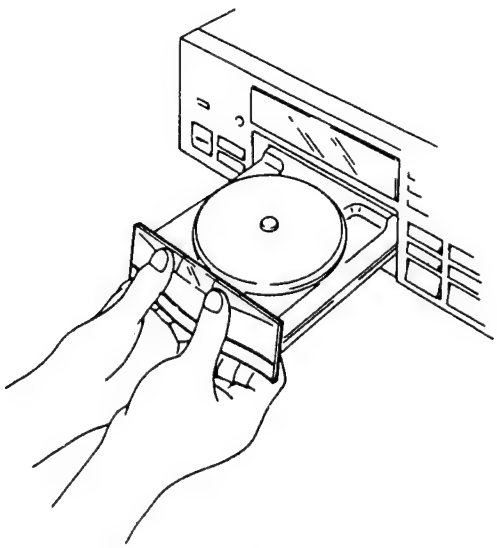


Fig. 4

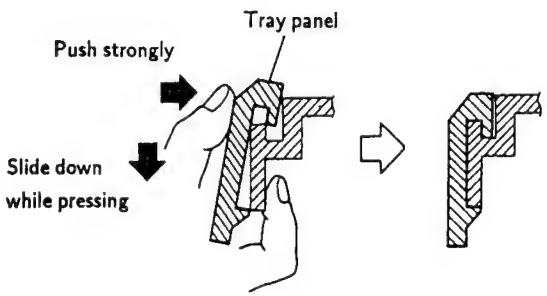
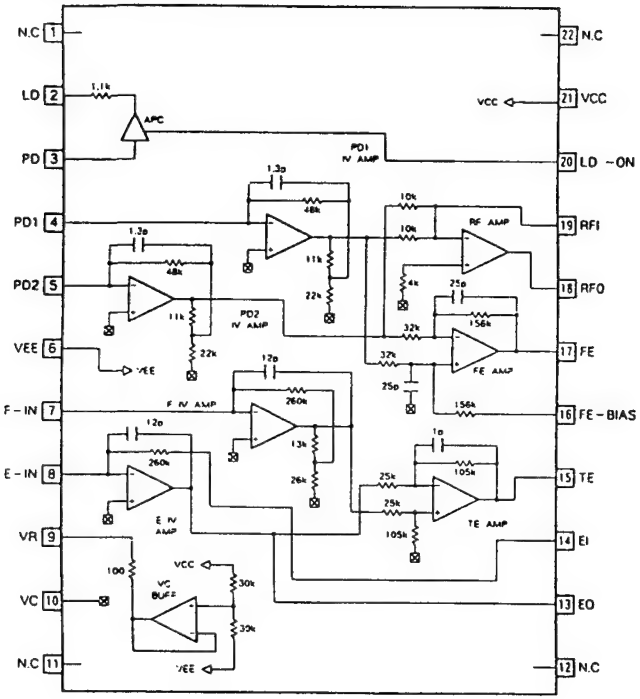


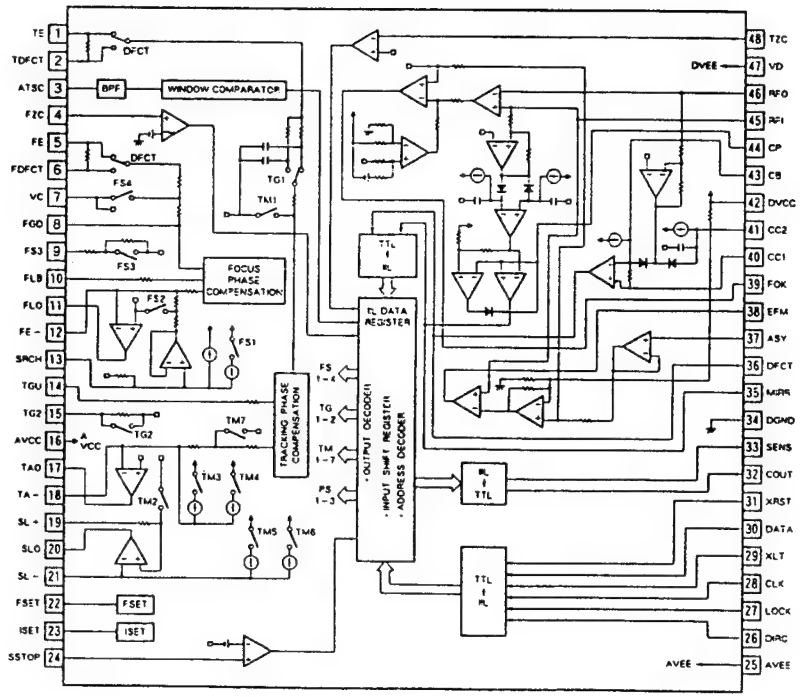
Fig. 5

● IC BLOCK DIAGRAMS

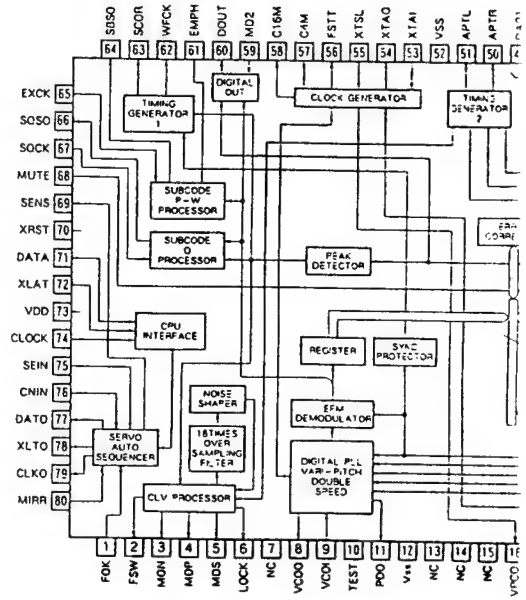
IC101:CXA1471S

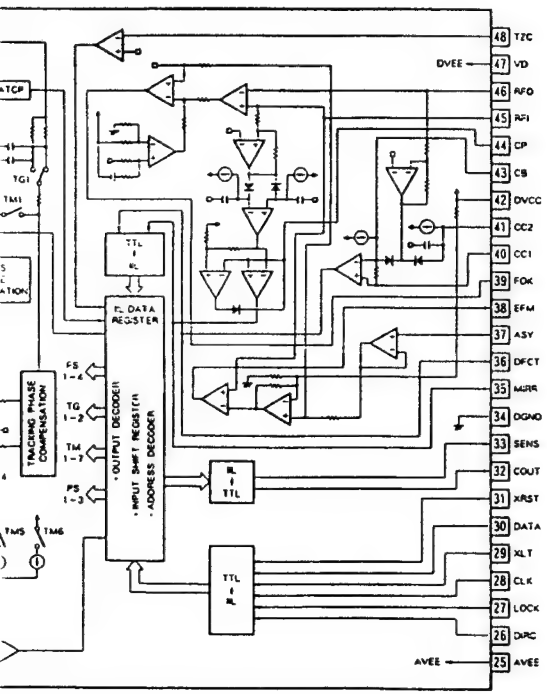


IC151:CXA1372S

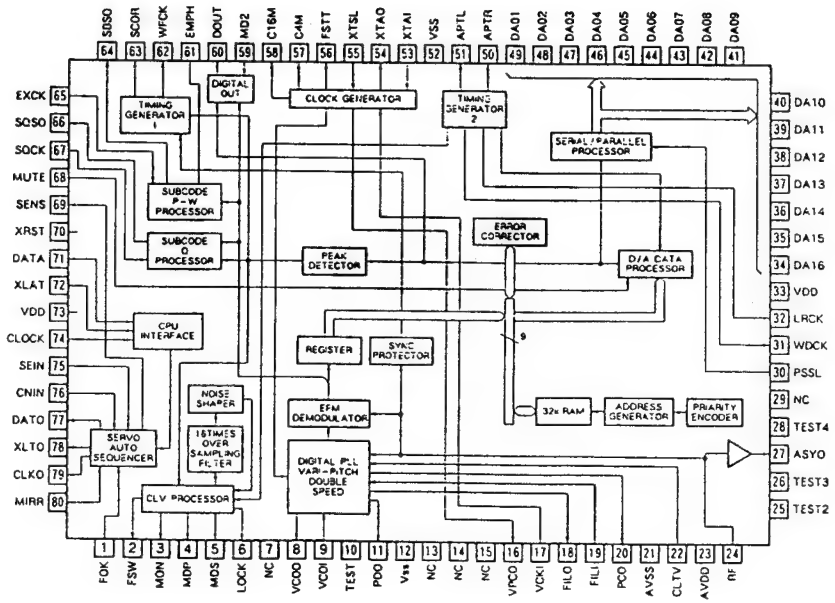


IC301:CXD2500AQ

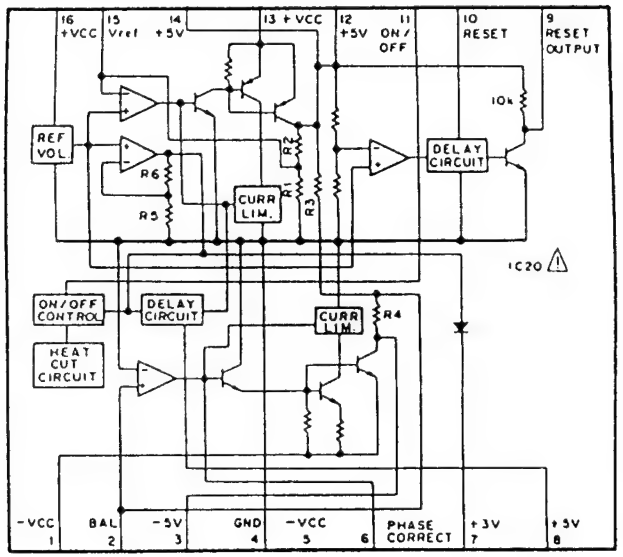




IC301: CXD2500AQ



IC20: TA2019P



5. SCHEMATIC AND PCB CONNECTIONS DIAGRAMS

WAVE FORMS

Note:The encircled numbers denote measuring points in the schematic diagram.

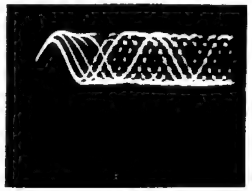
*1 50T - JUMP:After switching to the pause mode, press the manual search key.

*2 FOCUS - IN:Press the key without loading a disc.

*3 POWER ON : Plug AC cord into AC wall socket.

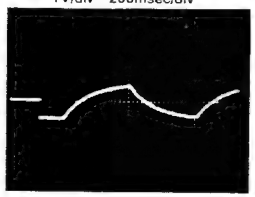
*4 POWER OFF: Unplug AC cord from AC wall socket.

② TP1 - Pin 1:PLAY MODE (RF) 500mV/div 500nsec/div



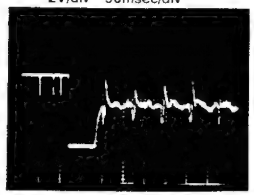
– GND

⑤ IC202-Pin 4: FOCUS-IN (* 2) MODE (FODR) 1V/div 200msec/div



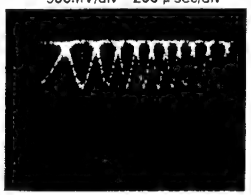
– GND

⑦ IC202-Pin 9: TRACK SEARCH MODE (SPDR) 2V/div 50msec/div



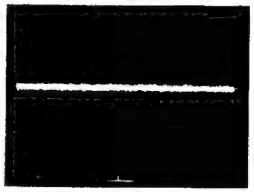
– GND

② TP1 - Pin 1:TRACK SEARCH MODE (RF) 500mV/div 200 μ sec/div



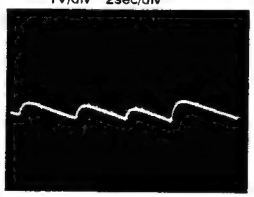
– GND

⑤ IC202-Pin 4: PLAY MODE (FODR) 1V/div 1msec/div



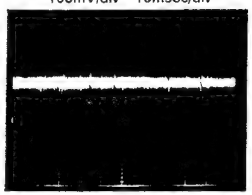
– GND

⑧ IC201 - Pin 4:PLAY MODE (CADR) 1V/div 2sec/div



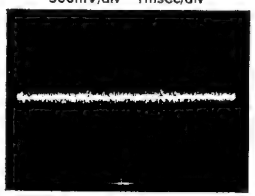
– GND

③ TP1 - Pin 6:PLAY MODE (FOER) 100mV/div 10msec/div



– GND

⑥ IC202 - Pin 3:PLAY MODE (TRDR) 500mV/div 1msec/div

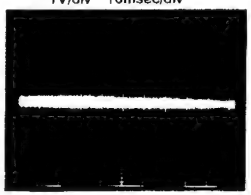


– GND

⑧ IC201 - Pin 4:TRACK SEARCH MODE (CADR) 2V/div 200msec/div

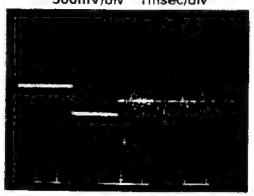
– GND

④ TP1 - Pin 2:PLAY MODE (TRER) 1V/div 10msec/div



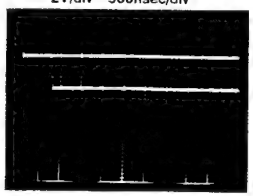
– GND

⑥ IC202 - Pin 3:50T - JUMP (*1) MODE (TRDR) 500mV/div 1msec/div



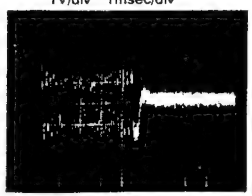
– GND

⑨ IC151 - Pin 38:PLAY MODE (EFM) 2V/div 500nsec/div



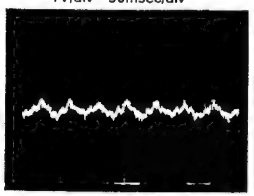
– GND

④ TP1 - Pin 2:50T - JUMP (*1) MODE (TRER) 1V/div 1msec/div



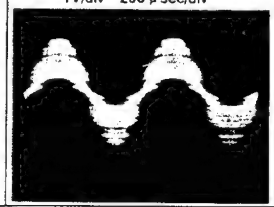
– GND

⑦ IC202-Pin 9: PLAY MODE (SPDR) 1V/div 50msec/div



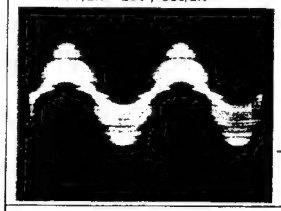
– GND

⑩ IC831-Pin 13: PLAY MODE (1kHz) ($\overline{LO}$) (D/A DATA OUT) 1V/div 200 μ sec/div



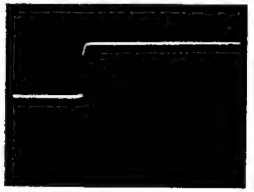
– GND

⑪ IC831-Pin 14: PLAY MODE (1kHz) (LO) (D/A DATA OUT) 1V/div 200 μ sec/div



– GND

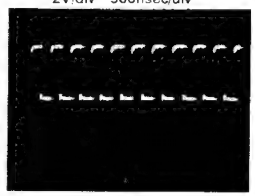
㉒ IC351-Pin 1: POWER ON (* 3) (RST) 2V/div 100msec/div



– GND

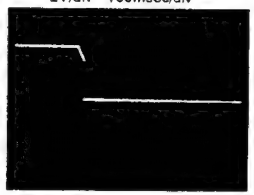
㉖

⑯ IC301 - Pin 35:PLAY MODE (1kHz) (BCLK) 2V/div 500nsec/div



– GND

㉒ IC351-Pin 1: POWER OFF (* 4) (RST) 2V/div 100msec/div



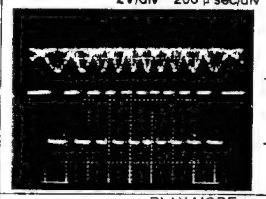
– GND

㉗

⑱ IC301 - Pin 32:PLAY MODE (1kHz) (LRCK) 2V/div 10 μ sec/div

– GND

㉓ :TRACK SEARCH MODE Upper:TP1 - Pin 1 (RF) 1V/div Lower:IC151 - Pin 35 (MIRR) 2V/div 200 μ sec/div

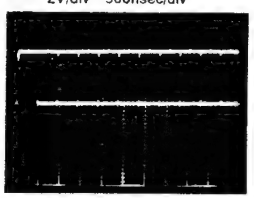


– GND

– GND

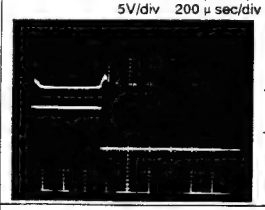
㉘

⑲ IC301 - Pin 34:PLAY MODE (1kHz) (DATA) 2V/div 500nsec/div



– GND

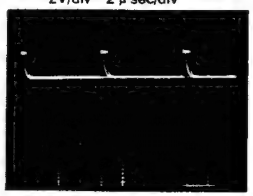
㉔ :PLAY MODE Upper:TP1 - Pin 1 (RF) 1V/div Lower:IC151 - Pin 36 (DFCT) 5V/div 200 μ sec/div



– GND

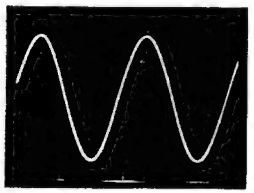
– GND

㉝ IC301 - Pin 4:PLAY MODE (MDP) 2V/div 2 μ sec/div



– GND

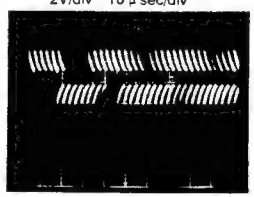
㉑ Pin - OUTPUT:PLAY MODE(1kHz) 1V/div 200 μ sec/div



– GND

㉕

㊸ IC301 - Pin 20:PLAY MODE (PCO) 2V/div 10 μ sec/div



– GND

1. RESISTORS :
   Indicated in Ω, 1/4W, 1/6W, 1/8W, ±5% tolerance unless otherwise noted k;kΩ, M;MΩ, (F);±1%, (G);±2%, (K);±10%, (M) ; ±20% tolerance.

2. CAPACITORS :
   Indicated in capacity (μF) /voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT :
    ; DC voltage (V) at play state.
   ←mA ; DC current at play state.

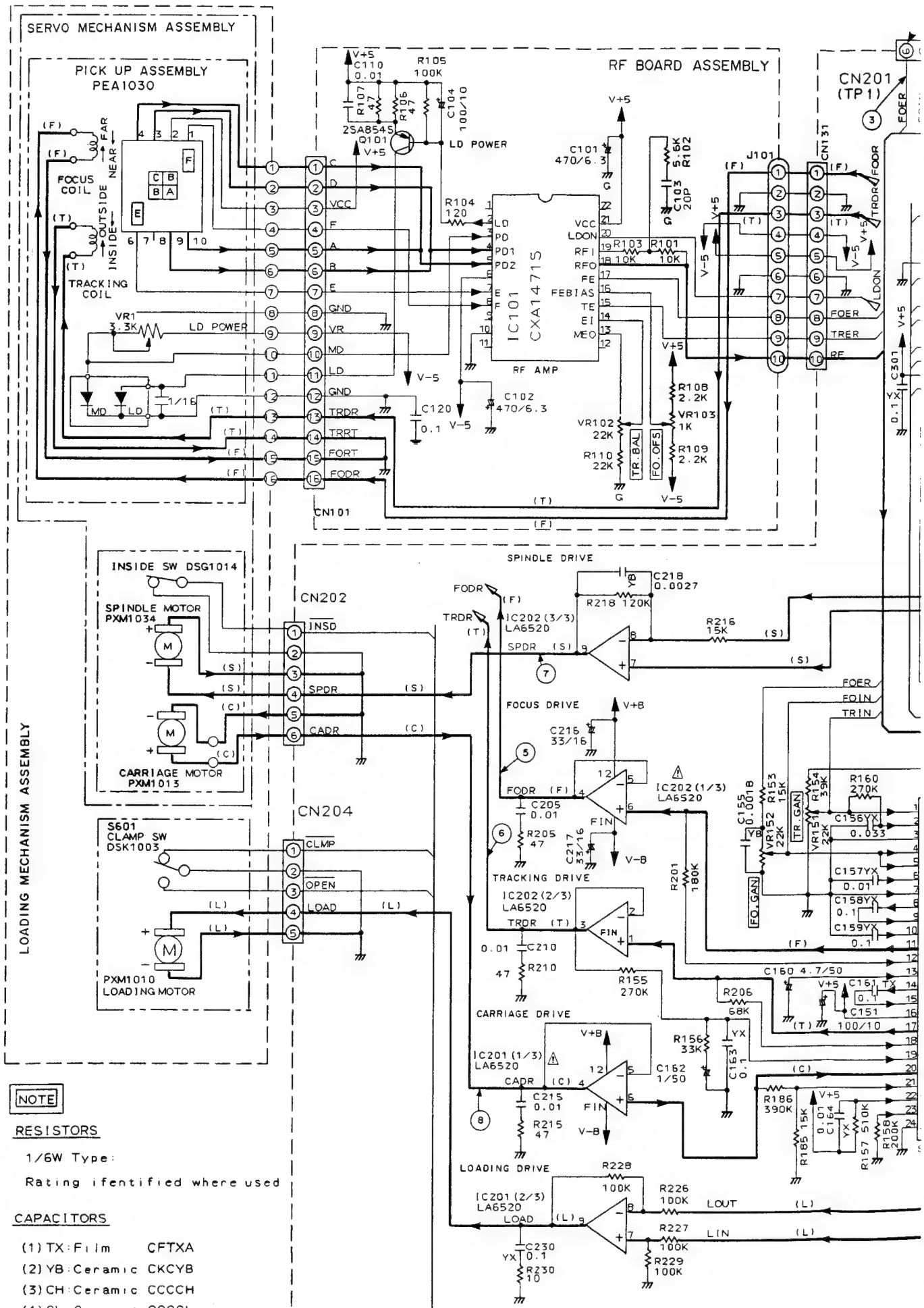
4. OTHERS :
   → ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES (The underlined indicates the switch position)

   FUNCTION BOARD ASSEMBLY
   S701 : O/C
   S702 : TIME
   S703 : OUT. S
   S704 : PLAY
   S705 : PAUSE
   S706 : STOP
   S707 : ▶▶|
   S708 : |◀◀
   S709 : ▶▶
   S710 : ◀◀

   SWITCH BOARD ASSEMBLY
   S751 : POWER ON – OFF
   S752 : D. OFF



NOTE

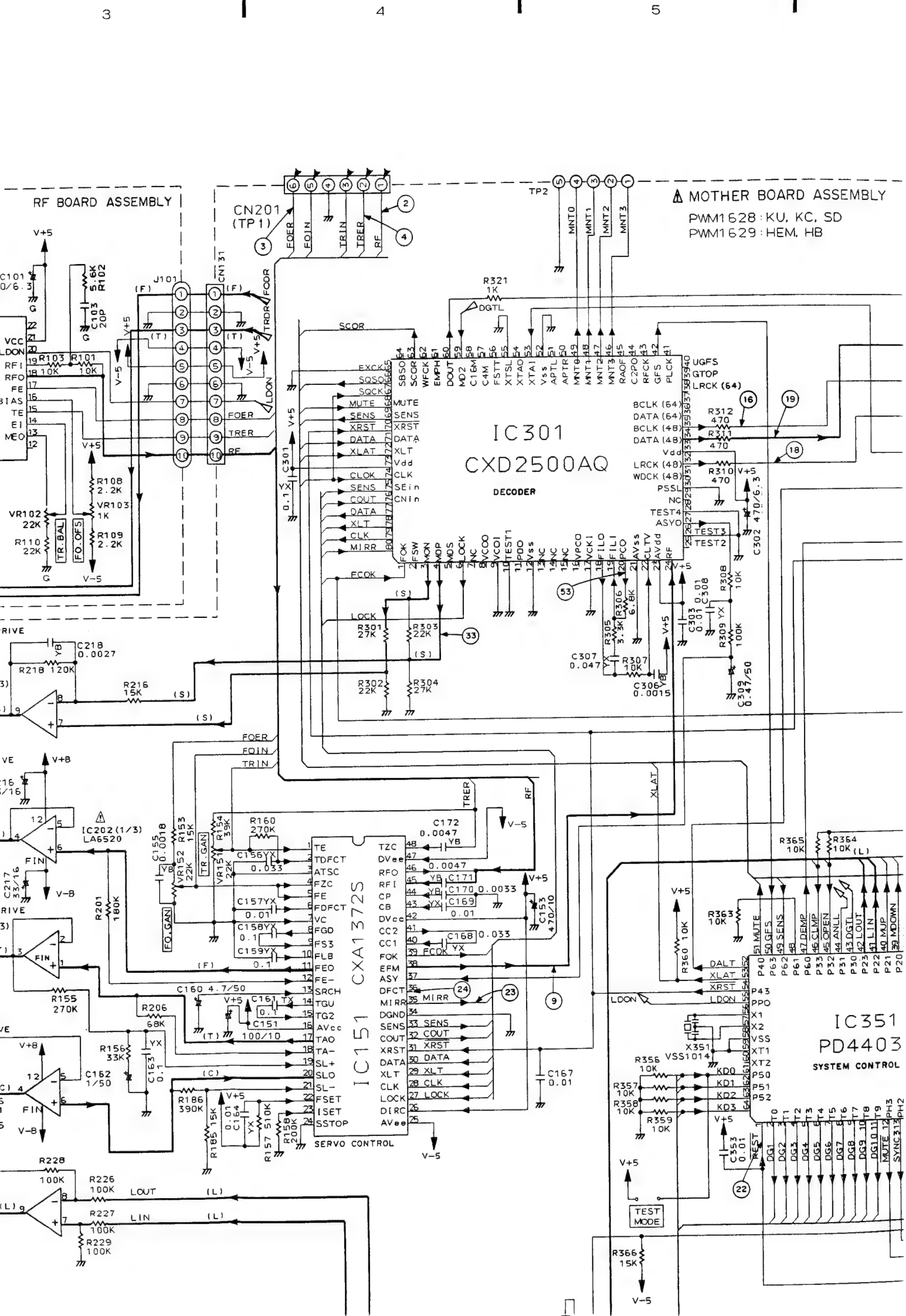
RESISTORS

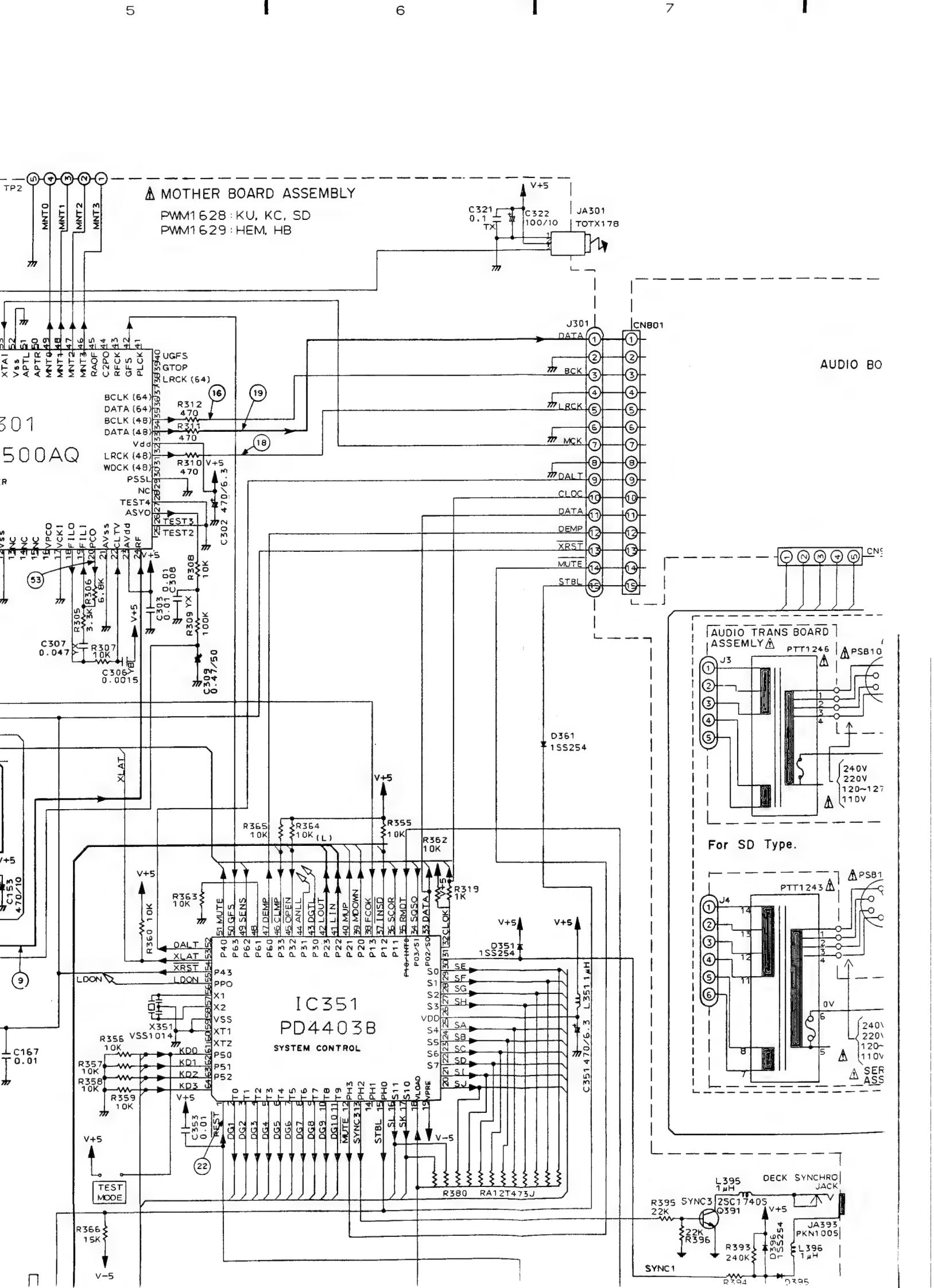
1/6W Type:

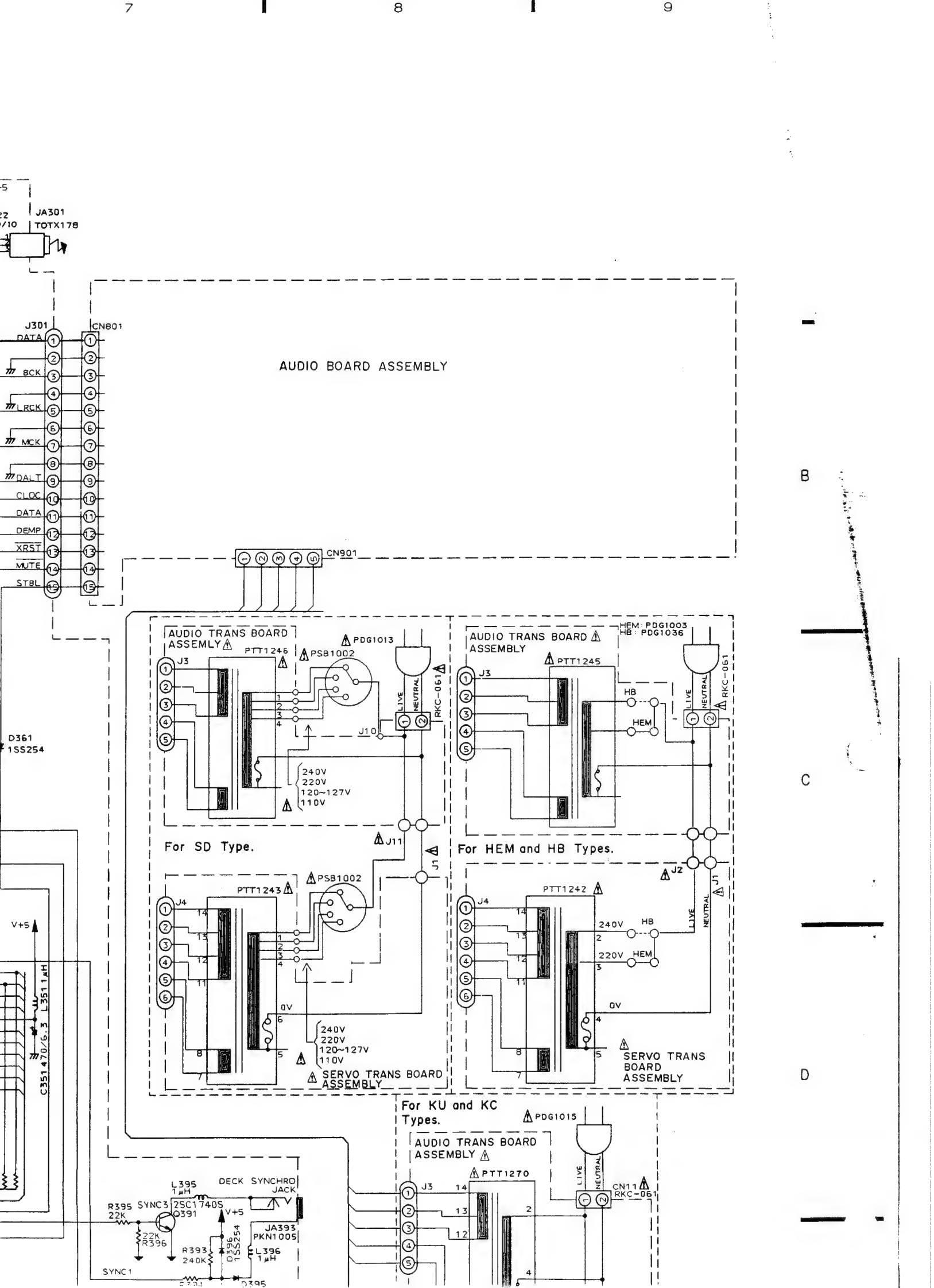
Rating ifentified where used

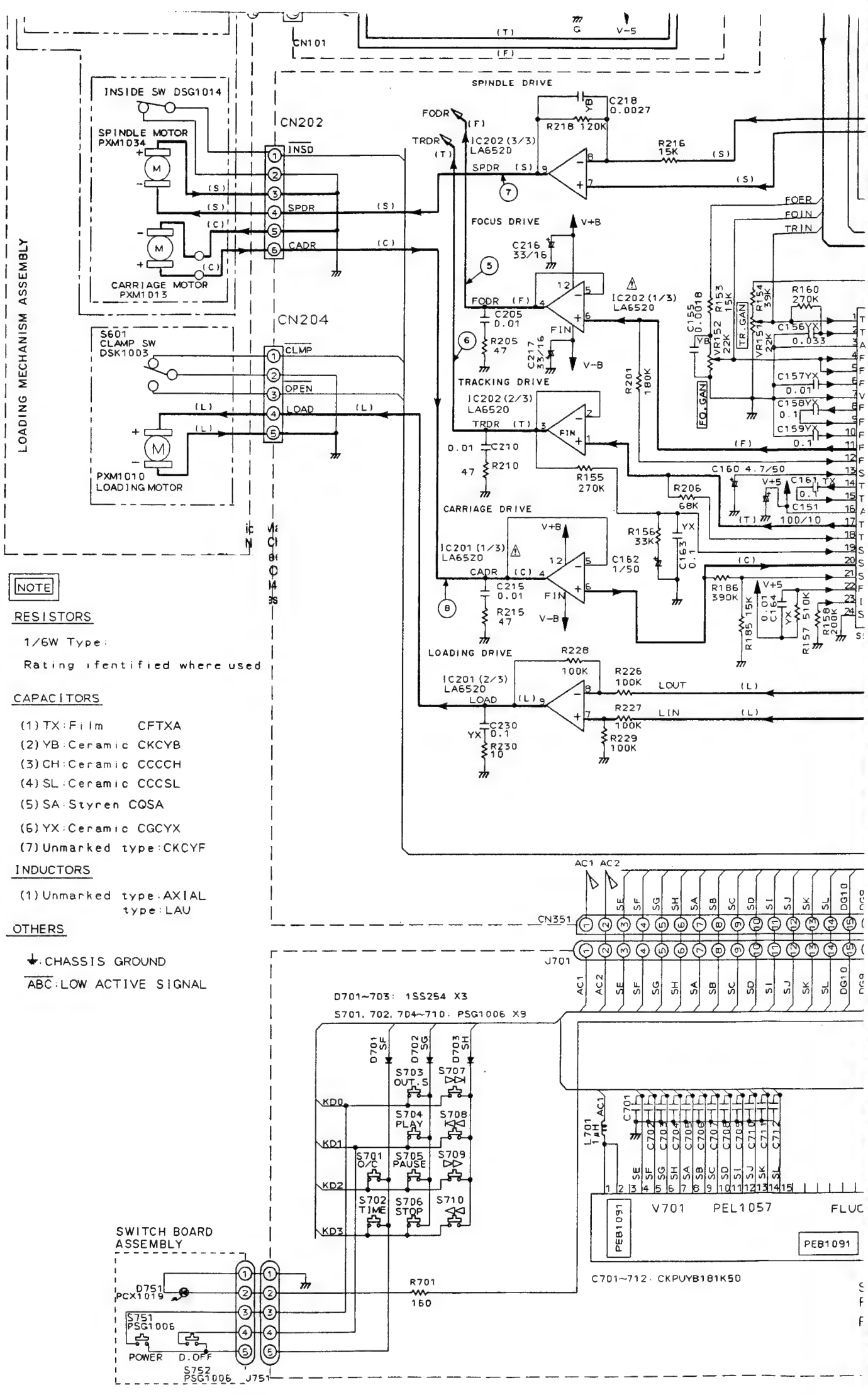
CAPACITORS

(1) TX:Film CFTXA
(2) YB:Ceramic CKCYB
(3) CH:Ceramic CCCCH
(4) SL:Ceramic CCCSL
(5) SA:Styren CQSA


RF BOARD ASSEMBLY
MOTHER BOARD ASSEMBLY
PWM1628 : KU, KC, SD
PWM1629 : HEM, HB
CN201 (TP1)
TP2
IC301
CXD2500AQ
DECODER
IC151 CXA1372S
SERVO CONTROL
IC351
PD4403
SYSTEM CONTROL
IC202(1/3) LA6520
TEST MODE
V+5
V-5
V+8
V-8
FOER
FOIN
TRIN
TRER
RF
XLAT
LDON
LOUT
LIN


5
6
7
MOTHER BOARD ASSEMBLY
PWM1628 : KU, KC, SD
PWM1629 : HEM, HB
TP2
MNT0
MNT1
MNT2
MNT3
C321 0.1 TX
C322 100/10
JA301 TOTX178
V+5
J301
CN801
DATA
BCK
LRCK
MCK
DALT
CLOC
DATA
DEMP
XRST
MUTE
STBL
AUDIO BO
AUDIO TRANS BOARD ASSEMLY
PTT1246
PSB10
J3
240V
220V
120~127
110V
For SD Type.
PTT1243
PSB1
J4
0V
SER ASS
D361 1SS254
D351 1SS254
IC351
PD4403B
SYSTEM CONTROL
X351 VSS1014
TEST MODE
R380 RA12T473J
DECK SYNCHRO JACK
L395 1µH
R395 22K
SYNC3
2SC1740S Q391
JA393 PKN1005
L396 1µH
SYNC1
BCLK (64)
DATA (64)
BCLK (48)
DATA (48)
LRCK (64)
LRCK (48)
WDCK (48)
PSSL
NC
TEST4
ASYO
TEST3
TEST2
XLAT
XRST
LDON
DALT
R312 470
R311 470
R310 470
R308 10K
R309 YX 100K
R306 6.8K
R305 3.3K
R307 10K
C307 0.047
C306 0.0015
C303 0.01
C308 0.01
C302 470/6.3
C309 0.47/50
R365 10K
R364 10K (L)
R355 10K
R362 10K
R363 10K
R360 10K
R319 1K
R356 10K
R357 10K
R358 10K
R359 10K
C353 0.01
C351 470/6.3
L351 1µH
C167 0.01
C153 470/10
R366 15K
V-5
R393 240K
R396 22K
D396 1SS254
R394
D395


JA301
TOTX178
J301
CN801
DATA
BCK
LRCK
MCK
DALT
CLOC
DATA
DEMP
XRST
MUTE
ST8L
AUDIO BOARD ASSEMBLY
CN901
AUDIO TRANS BOARD ASSEMBLY
PTT1246
PSB1002
PDG1013
J3
J10
LIVE
NEUTRAL
RKC-061
240V
220V
120~127V
110V
For SD Type.
J11
J1
PTT1243
J4
0V
SERVO TRANS BOARD ASSEMBLY
AUDIO TRANS BOARD ASSEMBLY
HEM: PDG1003
HB: PDG1036
PTT1245
HB
HEM
For HEM and HB Types.
J2
PTT1242
240V
220V
0V
SERVO TRANS BOARD ASSEMBLY
For KU and KC Types.
PDG1015
AUDIO TRANS BOARD ASSEMBLY
PTT1270
CN11
RKC-061
D361
1SS254
V+5
C351 470/6.3
L351 1μH
L395 1μH
DECK SYNCHRO JACK
R395 22K
SYNC3
2SC1740S
Q391
22K
R396
R393
240K
D396
1SS254
L396 1μH
JA393
PKN1005S
SYNC1
D395



NOTE

RESISTORS

1/6W Type:

Rating identified where used

CAPACITORS

(1) TX: Film CFTXA
(2) YB: Ceramic CKCYB
(3) CH: Ceramic CCCCH
(4) SL: Ceramic CCCSL
(5) SA: Styren CQSA
(6) YX: Ceramic CGCYX
(7) Unmarked type: CKCYF

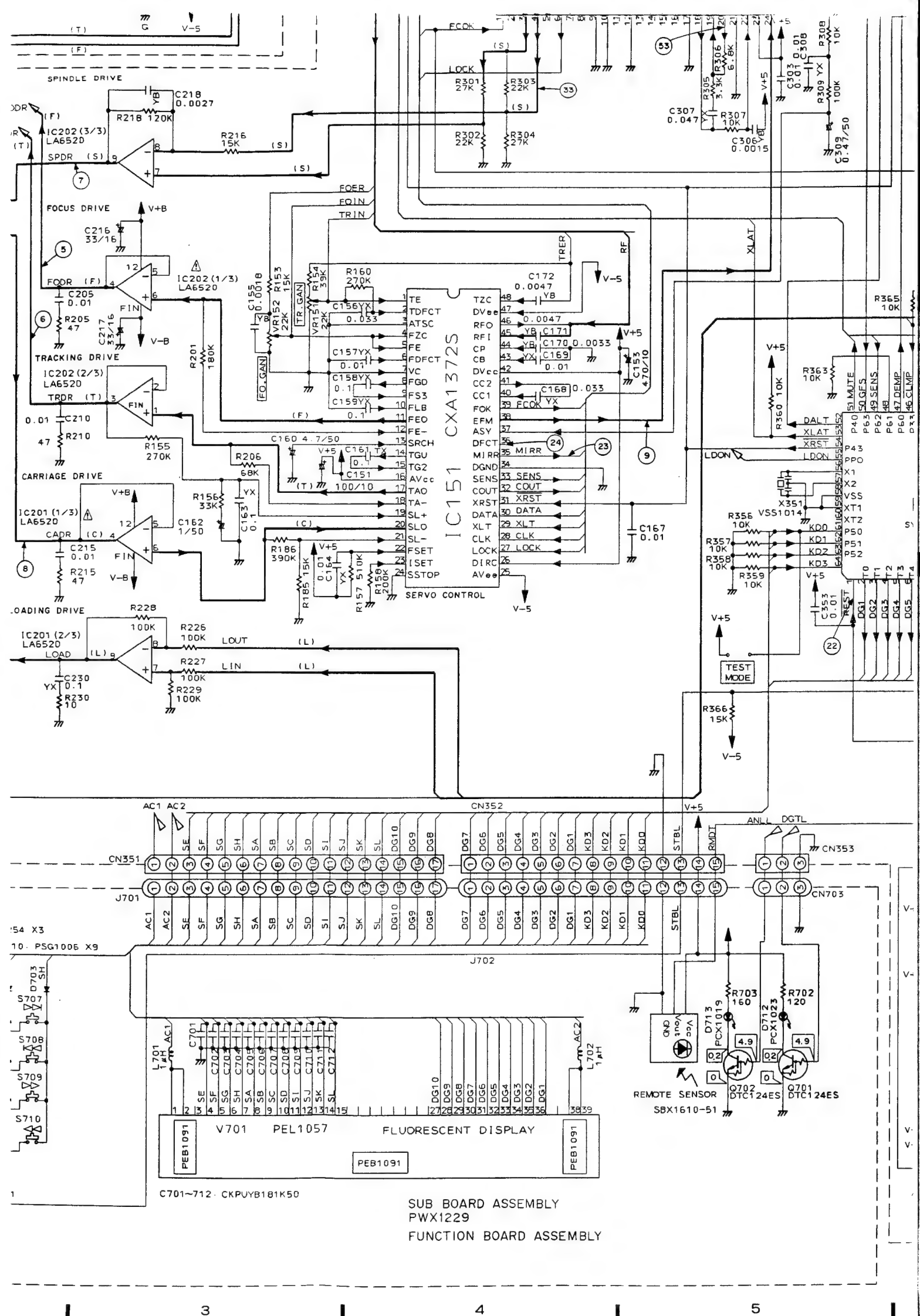
INDUCTORS

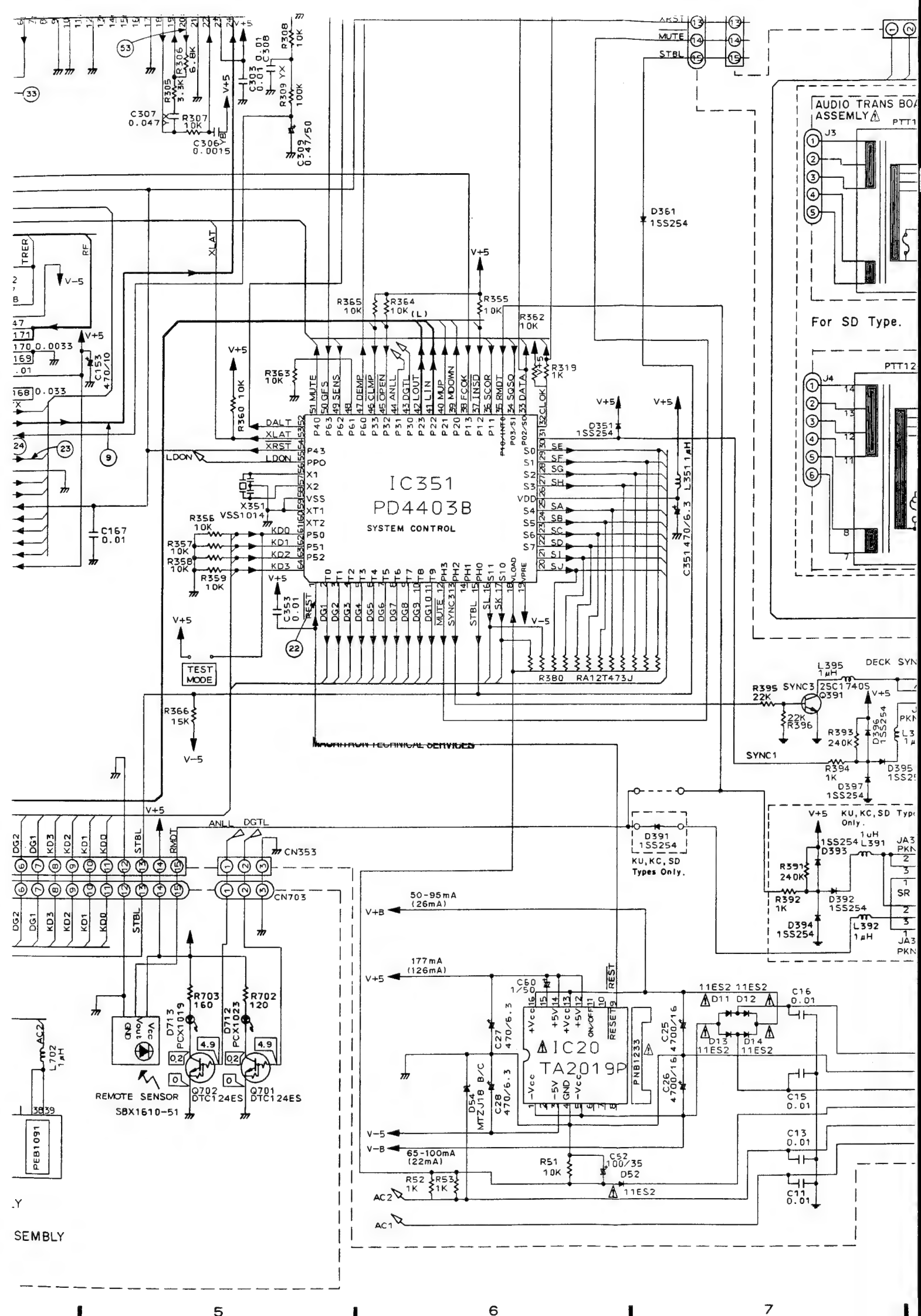
(1) Unmarked type: AXIAL
type: LAU

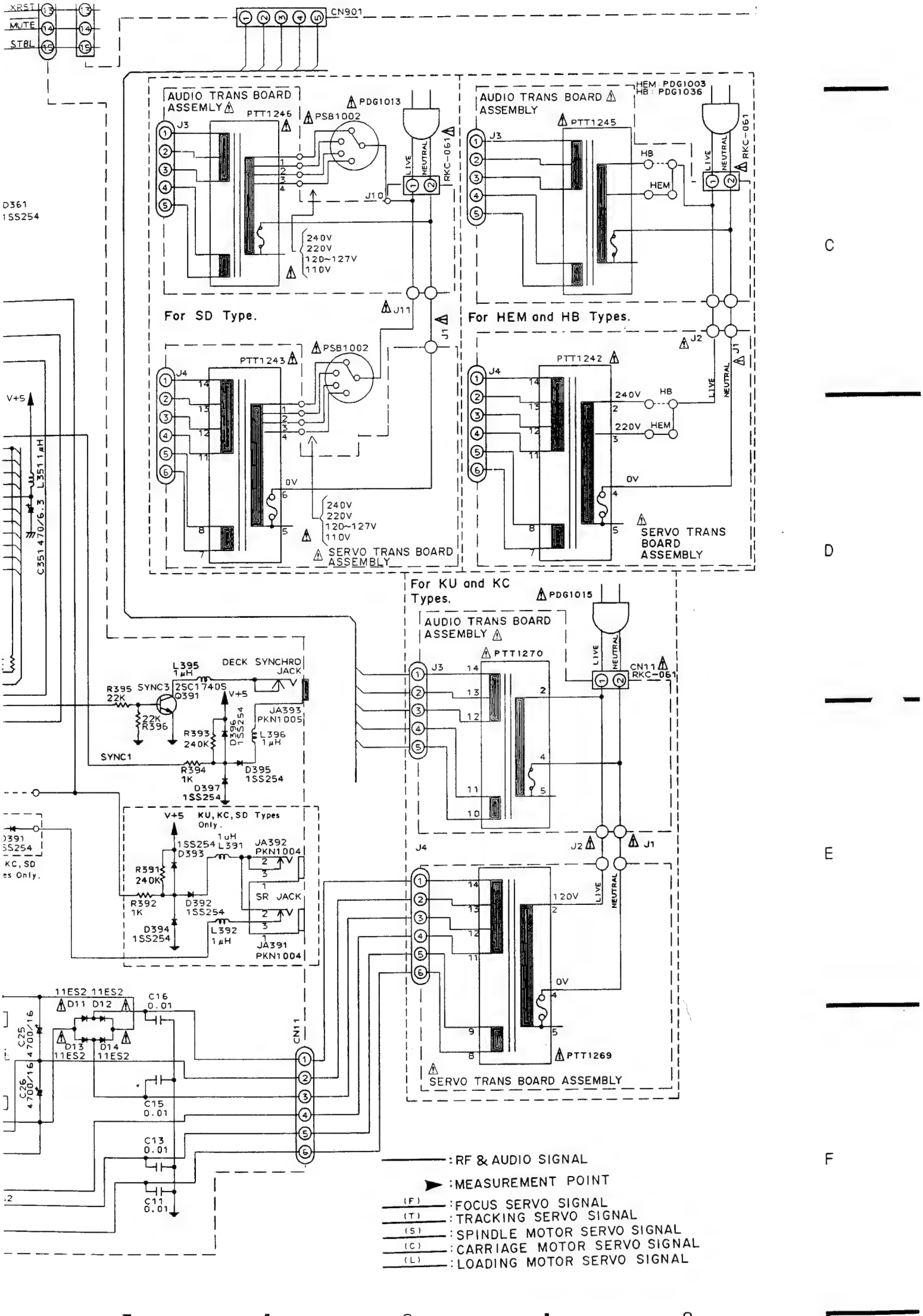
OTHERS

⏚: CHASSIS GROUND

$\overline{ABC}$: LOW ACTIVE SIGNAL


SPINDLE DRIVE
FOCUS DRIVE
TRACKING DRIVE
CARRIAGE DRIVE
LOADING DRIVE
IC202(3/3) LA6520
IC202(1/3) LA6520
IC202(2/3) LA6520
IC201(1/3) LA6520
IC201(2/3) LA6520
IC151 CXA1372S
SERVO CONTROL
TE
TDFCT
ATSC
FZC
FE
FDFCT
VC
FGD
FS3
FLB
FEO
FE-
SRCH
TGU
TG2
AVcc
TAO
TA-
SL+
SLO
SL-
FSET
ISET
SSTOP
TZC
DVee
RFO
RFI
CP
CB
DVcc
CC2
CC1
FOK
EFM
ASY
DFCT
MIRR
DGND
SENS
COUT
XRST
DATA
XLT
CLK
LOCK
DIRC
AVee
FCOK
LOCK
FOER
FOIN
TRIN
TRER
RF
XLAT
LOUT
LIN
LDON
DALT
TEST MODE
VSS1014
CN352
CN351
CN353
CN703
J701
J702
AC1 AC2
ANLL DGTL
STBL
RMDT
REMOTE SENSOR
SBX1610-51
Q702 DTC124ES
Q701 DTC124ES
D713 PCX1019
D712 PCX1023
V701 PEL1057
FLUORESCENT DISPLAY
PEB1091
C701~712 CKPUYB181K50
SUB BOARD ASSEMBLY
PWX1229
FUNCTION BOARD ASSEMBLY


IC351
PD4403B
SYSTEM CONTROL
IC20
TA2019P
AUDIO TRANS BOARD ASSEMLY
For SD Type.
TEST MODE
REMOTE SENSOR
SBX1610-51
KU, KC, SD Types Only.
DECK SYN
SEMBLY
V+5
V-5
V+B
V-B
XLAT
XRST
LDON
MUTE
STBL
ANLL
DGTL
RMDT
50-95mA (26mA)
177mA (126mA)
65-100mA (22mA)


XRST
MUTE
STBL
CN901
AUDIO TRANS BOARD ASSEMLY
PTT1246
PSB1002
PDG1013
RKC-061
LIVE
NEUTRAL
240V
220V
120~127V
110V
For SD Type.
AUDIO TRANS BOARD ASSEMBLY
PTT1245
HEM: PDG1003
HB: PDG1036
HB
HEM
For HEM and HB Types.
PTT1243
PTT1242
0V
SERVO TRANS BOARD ASSEMBLY
For KU and KC Types.
PDG1015
PTT1270
CN11
PTT1269
V+5
L351 1μH
C351 470/6.3
L395 1μH
DECK SYNCHRO JACK
R395 22K
SYNC3
2SC1740S Q391
R396 22K
R393 240K
D396 1SS254
L396 1μH
JA393 PKN1005
SYNC1
R394 1K
D395 1SS254
D397 1SS254
KU, KC, SD Types Only.
D393 1SS254
L391 1μH
JA392 PKN1004
R391 240K
R392 1K
D392 1SS254
D394 1SS254
L392 1μH
JA391 PKN1004
SR JACK
D11 D12 D13 D14 11ES2
C16 0.01
C25 4700/16
C26 4700/16
C15 0.01
C13 0.01
C11 0.01
CN11
:RF & AUDIO SIGNAL
:MEASUREMENT POINT
(F) :FOCUS SERVO SIGNAL
(T) :TRACKING SERVO SIGNAL
(S) :SPINDLE MOTOR SERVO SIGNAL
(C) :CARRIAGE MOTOR SERVO SIGNAL
(L) :LOADING MOTOR SERVO SIGNAL

7 8 9

IC301
(CXD2500AQ)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	5.0	21	0	41	2.5	61	0
2	2.1	22	2.5	42	5.0	62	2.5
3	5.0	23	5.0	43	2.5	63	0
4	2.6	24	2.5	44	0	64	0
5	2.2	25	0.2	45	5.0	65	0
6	5.0	26	0	46	4.4	66	3.3 to 4.6
7	0	27	2.5	47	0	67	5.0
8	5.0	28	0	48	0	68	0
9	0	29	0	49	0 to 0.3	69	2.1 to 3.0
10	0	30	0	50	1.2	70	5.0
11	2.1	31	1.3 to 2.2	51	1.2	71	5.0
12	0	32	2.5	52	0	72	5.0
13	1.0	33	5.0	53	2.5	73	5.0
14	0.9 to 1.3	34	2.5	54	2.5	74	5.0
15	0	35	2.5	55	0	75	5.0
16	2.0	36	2.5	56	2.9	76	0
17	0	37	2.5	57	2.5	77	5.0
18	2.5	38	2.5	58	2.5	78	5.0
19	2.4	39	0	59	5.0	79	5.0
20	2.4	40	5.0	60	2.5	80	0

IC151 (CXA1372S)

Pin No.	Volts	Pin No.	Volts
1	0	25	5.0
2	0	26	0
3	0	27	5.0
4	0	28	0
5	−0.3	29	0
6	0	30	−5.0
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5.0
10	5	34	−1.5
11	0	35	−1.7
12	0	36	5.0
13	0	37	−0.7
14	0 to 0.3	38	−1.6
15	0	39	0
16	−4.0	40	0.2
17	1.3	41	−5.0
18	0	42	0
19	−5.0	43	0
20	5.0	44	0
21	5.0	45	0
22	5.0	46	0
23	5.0	47	0
24	5.0	48	0

IC101
(CXA1471S)

Pin No.	Volts
1	N.C
2	2.9
3	−4.7
4	0
5	0
6	−5.0
7	0
8	0
9	N.C
10	0
11	N.C
12	N.C
13	−0.9
14	−0.7
15	0
16	0
17	0
18	0.8
19	0
20	5.0
21	5.0
22	N.C

IC351 (PD4403)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	5. 1	17	11.3 to 11.8	33	4. 9	49	0. 1
2	-22.5to-23.5	18	−26. 3	34	3.5 to 4.5	50	5. 1
3	-22.5to-23.5	19	−4. 9	35	5. 0	51	0
4	-22.5to-23.5	20	-7.8 to -8.1	36	0. 1	52	5. 0
5	-22.5to-23.5	21	-5.9 to -6.5	37	5. 0	53	5. 0
6	-22.5to-23.5	22	-8.3 to-11.0	38	5. 0	54	5. 0
7	-22.5to-23.5	23	-5.2 to -5.5	39	0	55	5. 0
8	-22.5to-23.5	24	-3.0 to -6.0	40	0	56	2. 3
9	-22.5to-23.5	25	-5.5 to -8.5	41	0	57	2. 4
10	-22.5to-23.5	26	5. 0	42	0	58	0
11	-22.5to-23.5	27	-19.4to-19.7	43	4. 9	59	0
12	5. 0	28	-19.4to-19.7	44	4. 9	60	N. C
13	5. 0	29	-14.0to-17.0	45	5. 0	61	0
14	N. C. (2. 6)	30	-11.0to-14.0	46	0	62	0
15	−0. 9	31	4. 9	47	4. 9	63	0
16	14.3 to 14.8	32	4. 9	48	0	64	0

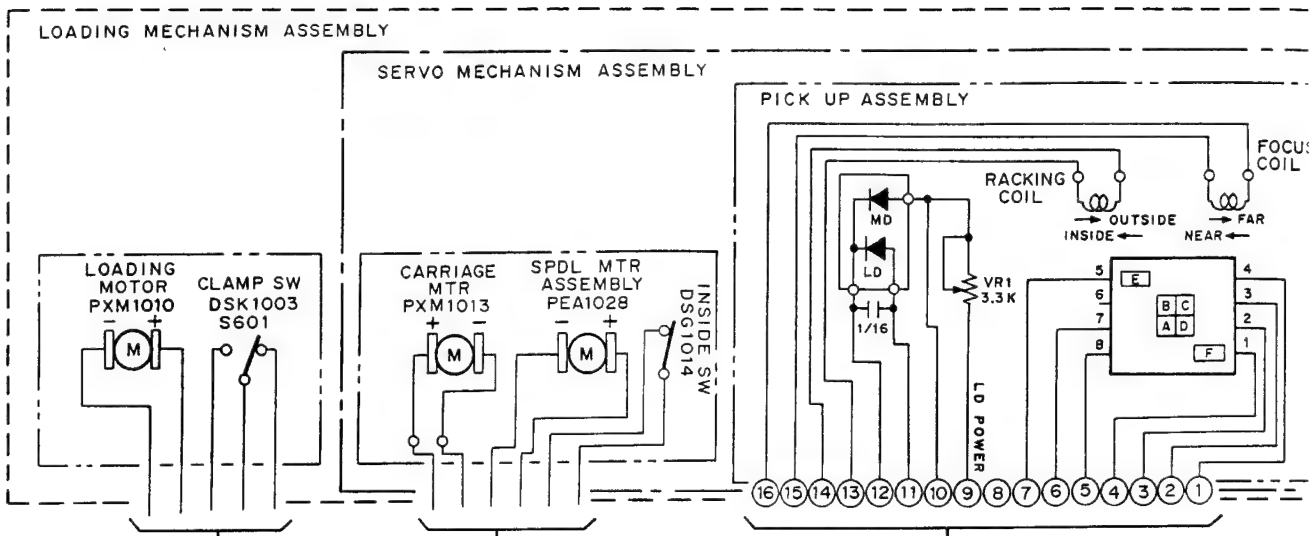
IC201 (LA6520)

Pin No.	Volts
1	0. 5
2	0. 5
3	8. 9
4	0.1 to 0.8
5	0.1 to 0.8
6	0.1 to 0.8
7	0
8	0
9	0
10	N. C
11	N. C
12	8. 9

IC202 (LA6520)

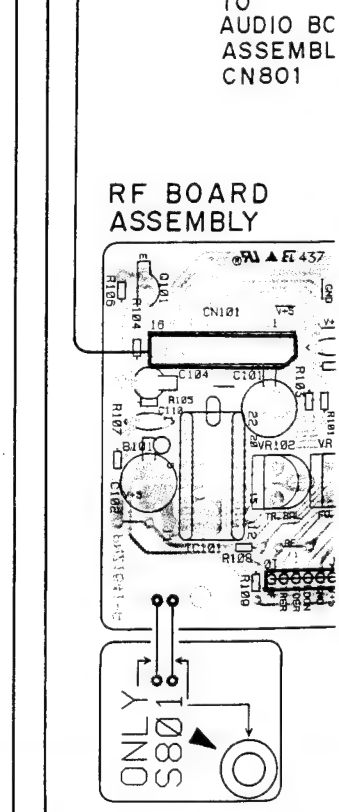
Pin No.	Volts
1	0. 1
2	0. 1
3	0. 1
4	−0. 1
5	−0. 1
6	−0. 1
7	2. 3
8	2. 3
9	-0.7to-1.0
10	N. C
11	N. C
12	8. 9

• View from component side



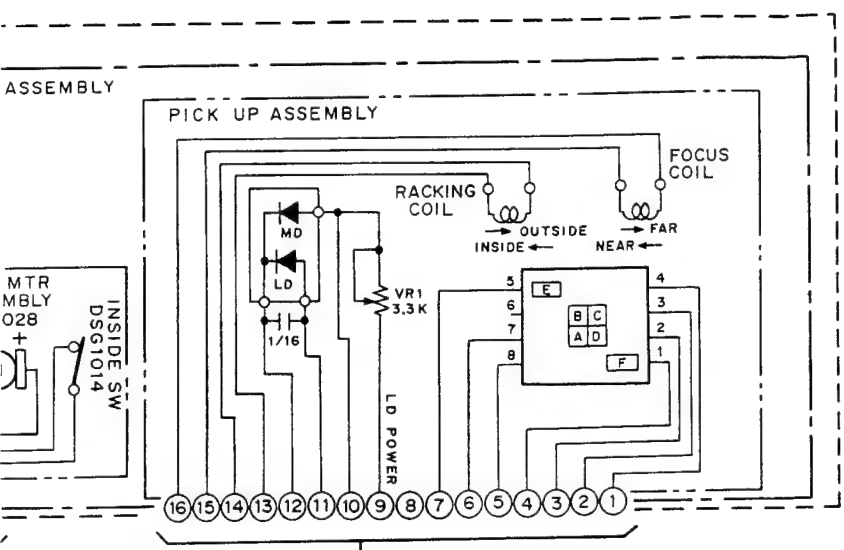
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
					Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
					Resistor
		Inductor			
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.



MOTHER BOARD ASSEMBLY
(PWM1628:KU,KC,SD Types.)
(PWM1629:HEM,HB Types.)

KU,KC,SD Types



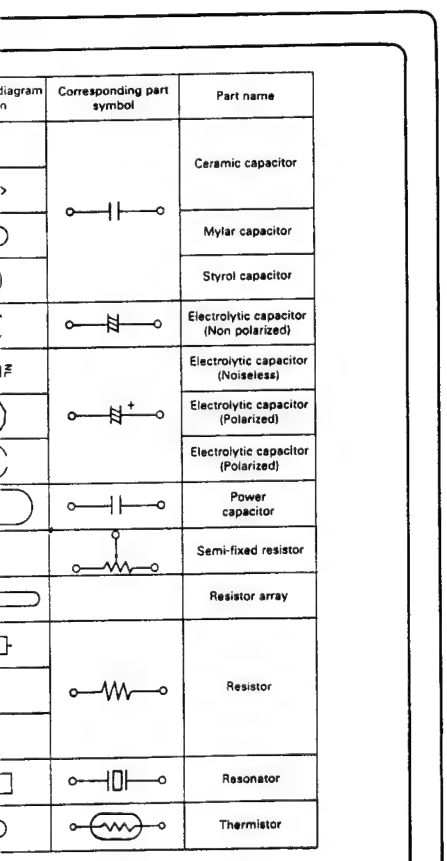
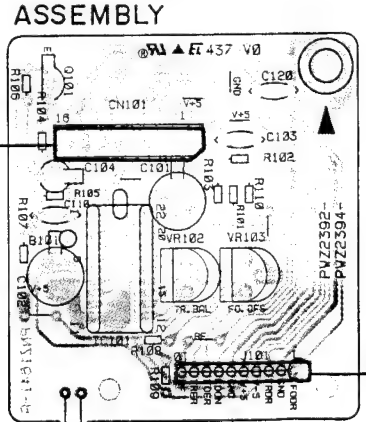


diagram n	Corresponding part symbol	Part name
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

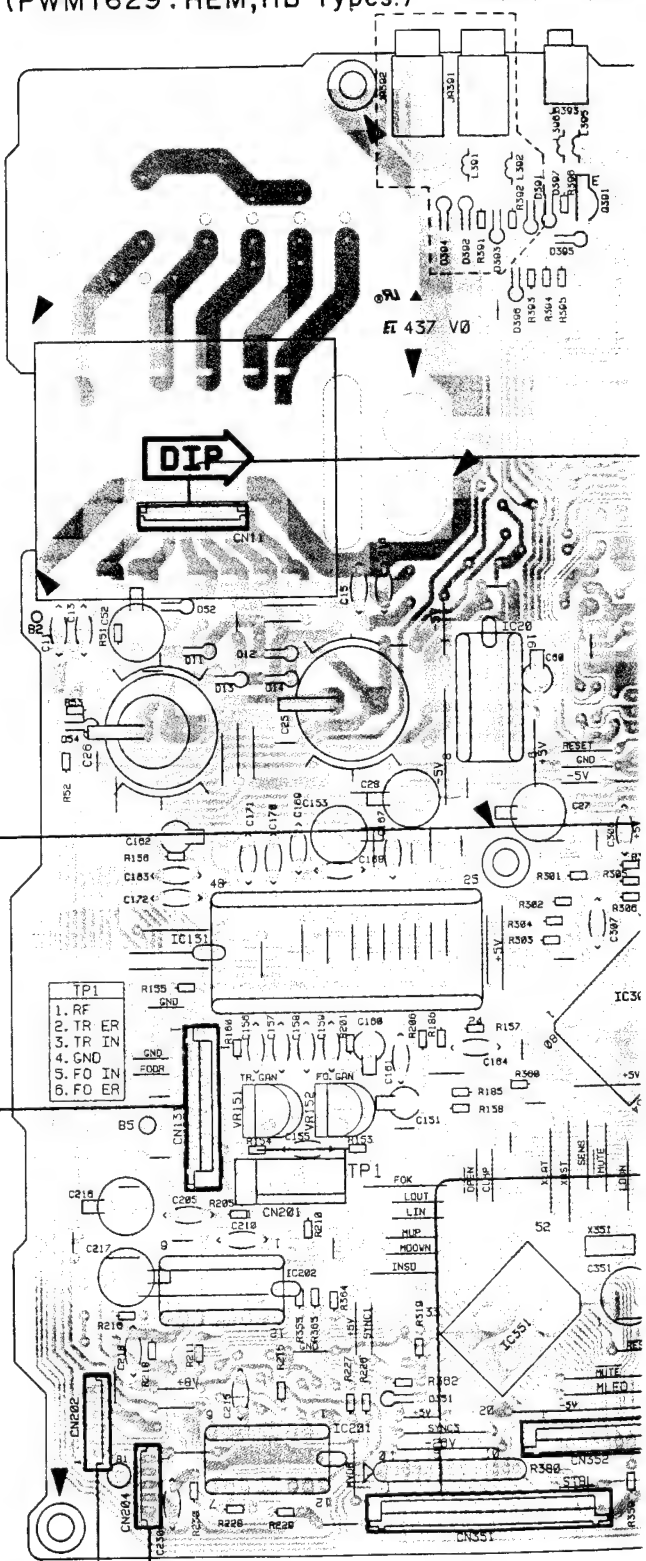
...own with the corresponding wiring symbols listed in the

TO
AUDIO BOARD
ASSEMBLY
CN801

RF BOARD
ASSEMBLY

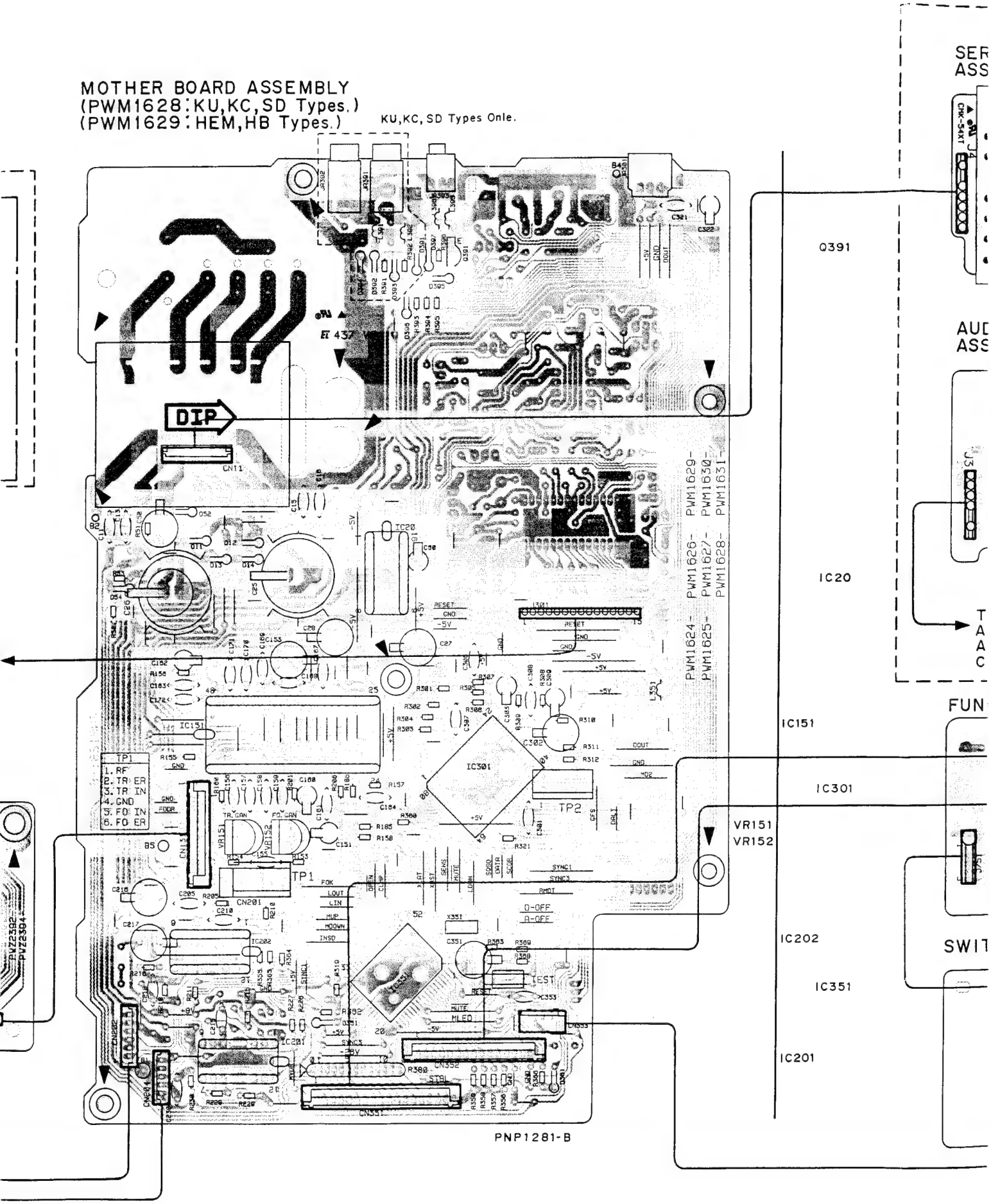


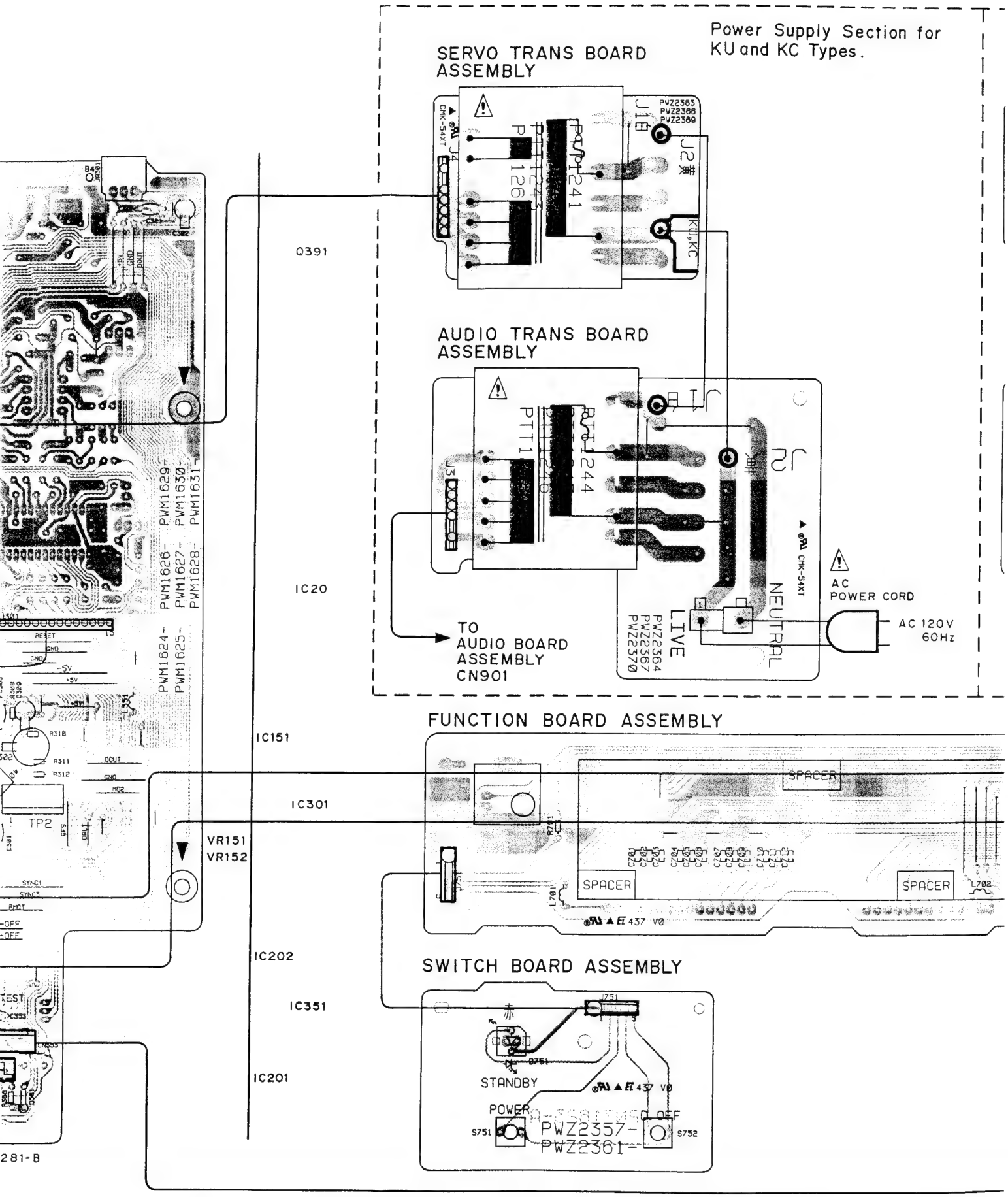
ONLY S801



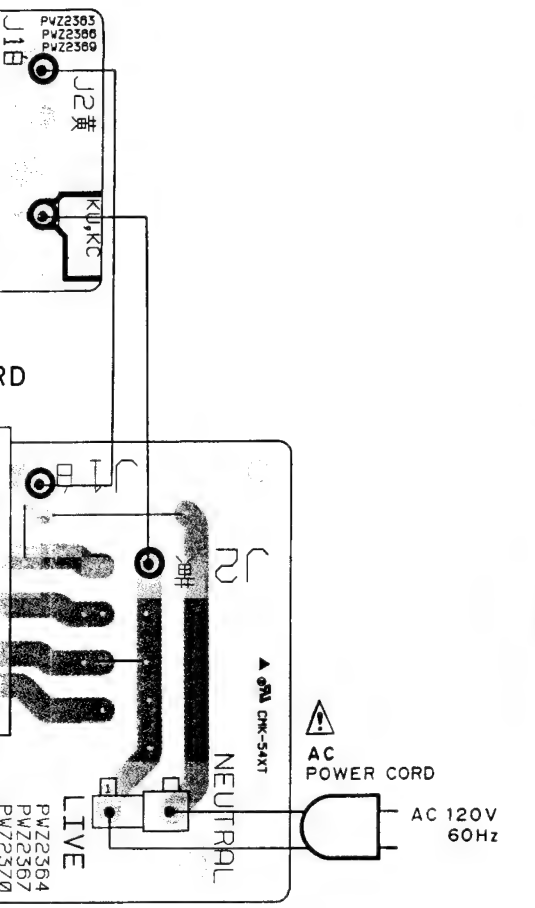
MOTHER BOARD ASSEMBLY
(PWM1628:KU,KC,SD Types.)
(PWM1629:HEM,HB Types.)

KU,KC,SD Types Onle.

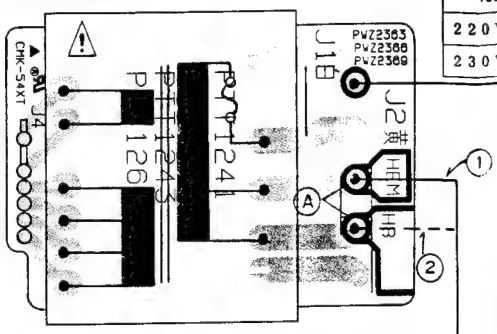



Power Supply Section for
KU and KC Types.
SERVO TRANS BOARD
ASSEMBLY
AUDIO TRANS BOARD
ASSEMBLY
FUNCTION BOARD ASSEMBLY
SWITCH BOARD ASSEMBLY
Q391
IC20
IC151
IC301
VR151
VR152
IC202
IC351
IC201
TO
AUDIO BOARD
ASSEMBLY
CN901
AC
POWER CORD
AC 120V
60Hz
NEUTRAL
LIVE
PWZ2364
PWZ2367
PWZ2370
PWZ2383
PWZ2386
PWZ2389
PWM1624-
PWM1625-
PWM1626-
PWM1627-
PWM1628-
PWM1629-
PWM1630-
PWM1631-
SPACER
STANDBY
POWER
PWZ2357-
PWZ2361-
S751
S752
281-B

Power Supply Section for
KU and KC Types.



SERVO TRANS BOARD
ASSEMBLY



Line Voltage Selection
Line voltage can be changed with the following steps.
1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the position of the jumper wire Ⓐ as follows.

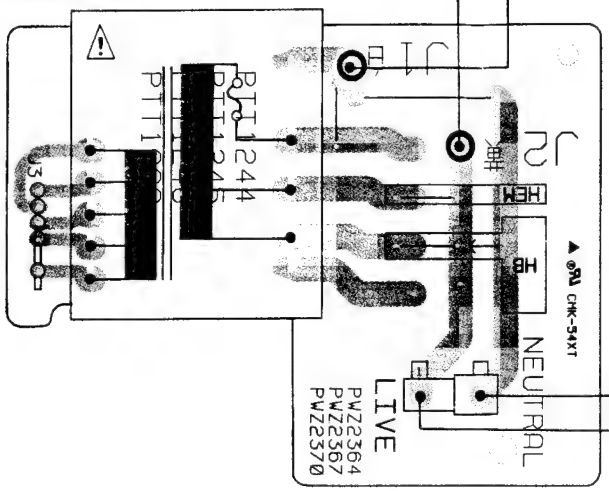
Voltage	Jumper wire Ⓐ position
220V-230V	①
230V-240V	②

4. Stick the line voltage on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

Power Supply Section for
HEM and HB Types.

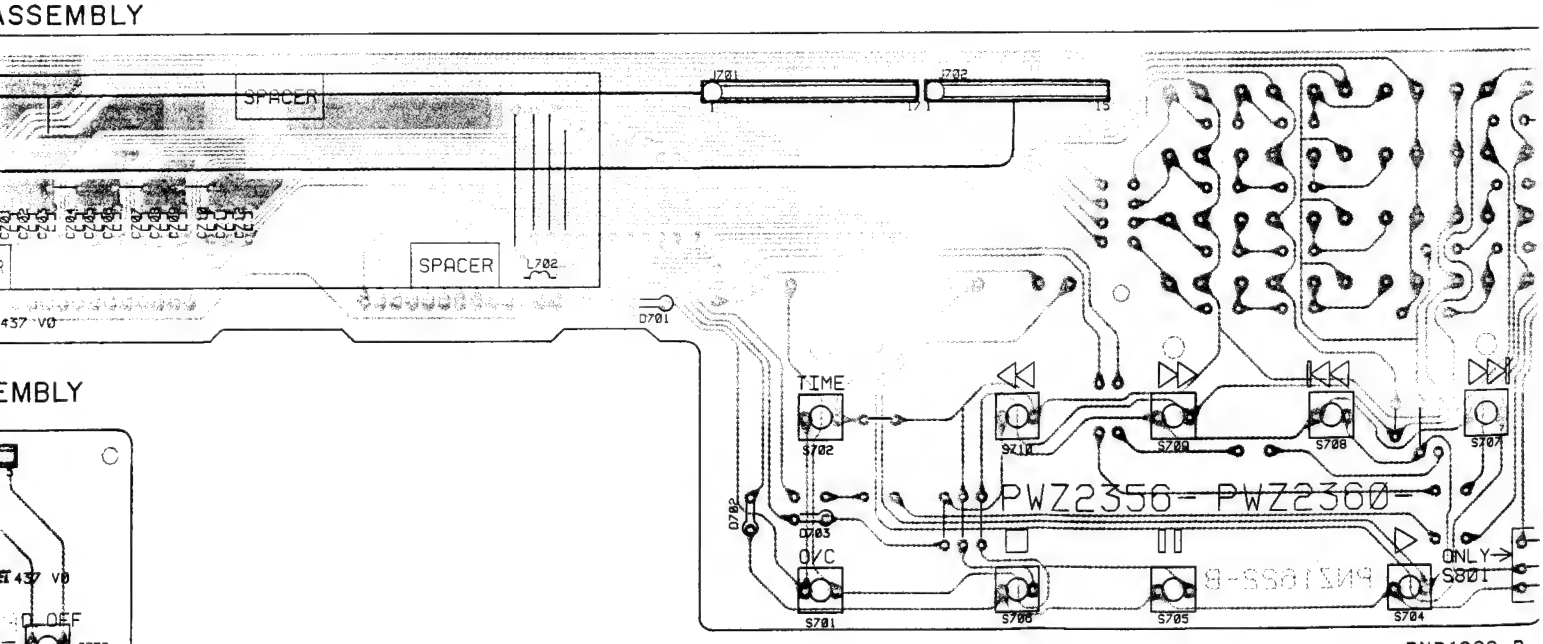
AUDIO TRANS BOARD
ASSEMBLY



SERV
ASSE

AUDI
ASSE

ASSEMBLY



EMBLY

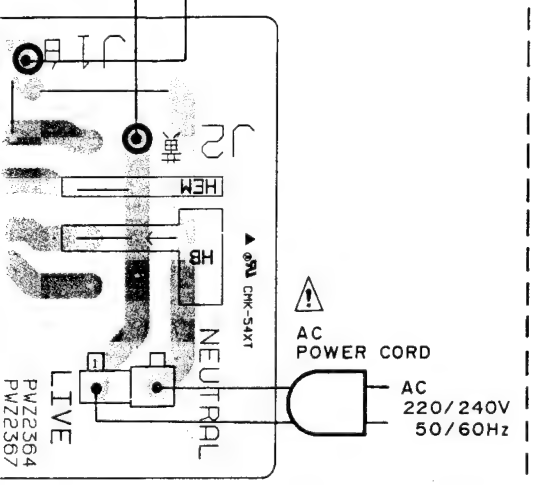
Line Voltage Selection
Line voltage can be changed with the following steps.
1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the position of the jumper wire Ⓐ as follows.

Voltage	Jumper wire Ⓐ position
220V-230V	①
230V-240V	②

4. Stick the line voltage on the rear panel.

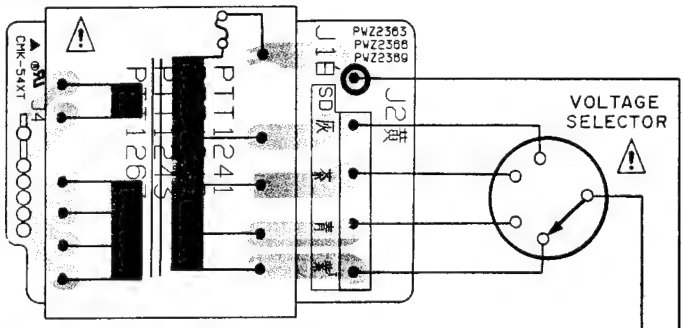
Part No.	Description
AAX-193	220V label
AAX-192	240V label

Power Supply Section for HEM and HB Types.

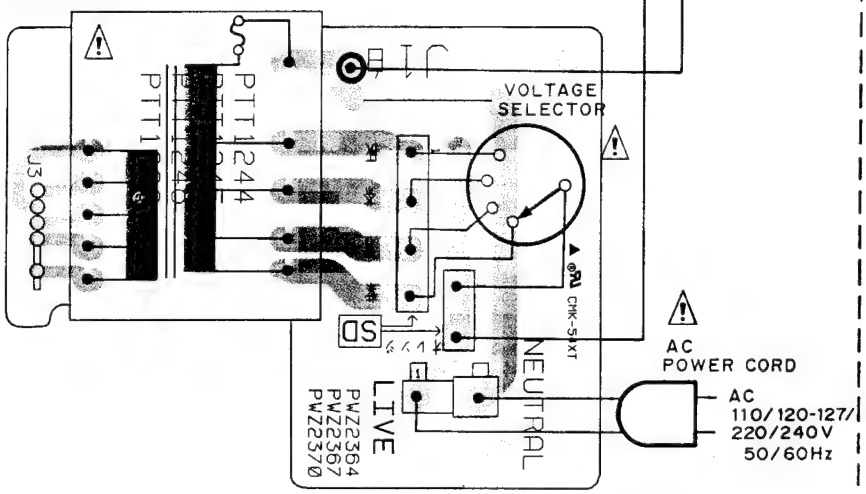


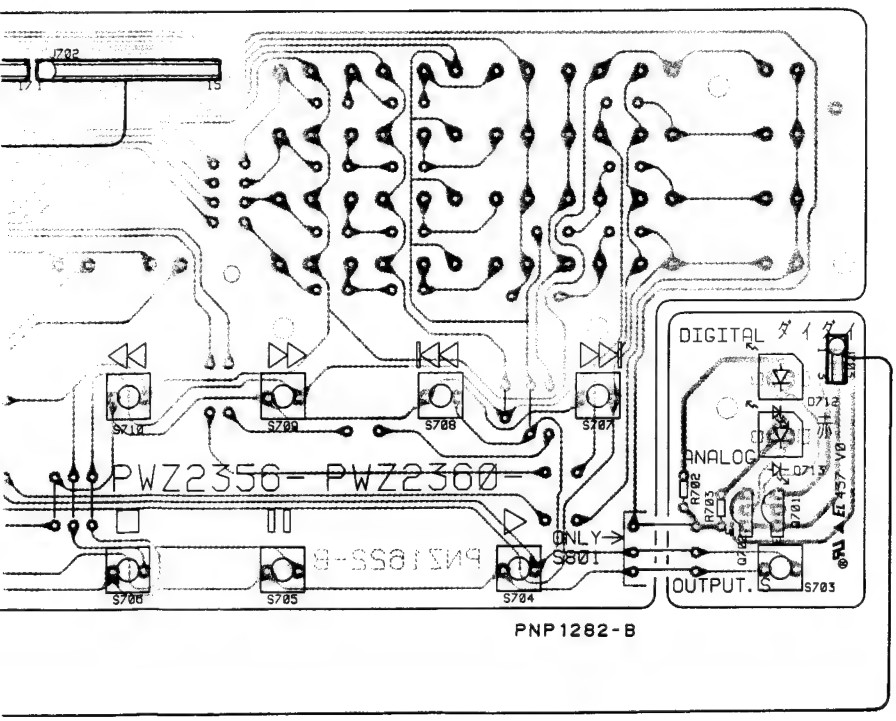
Power Supply Section for SD Type.

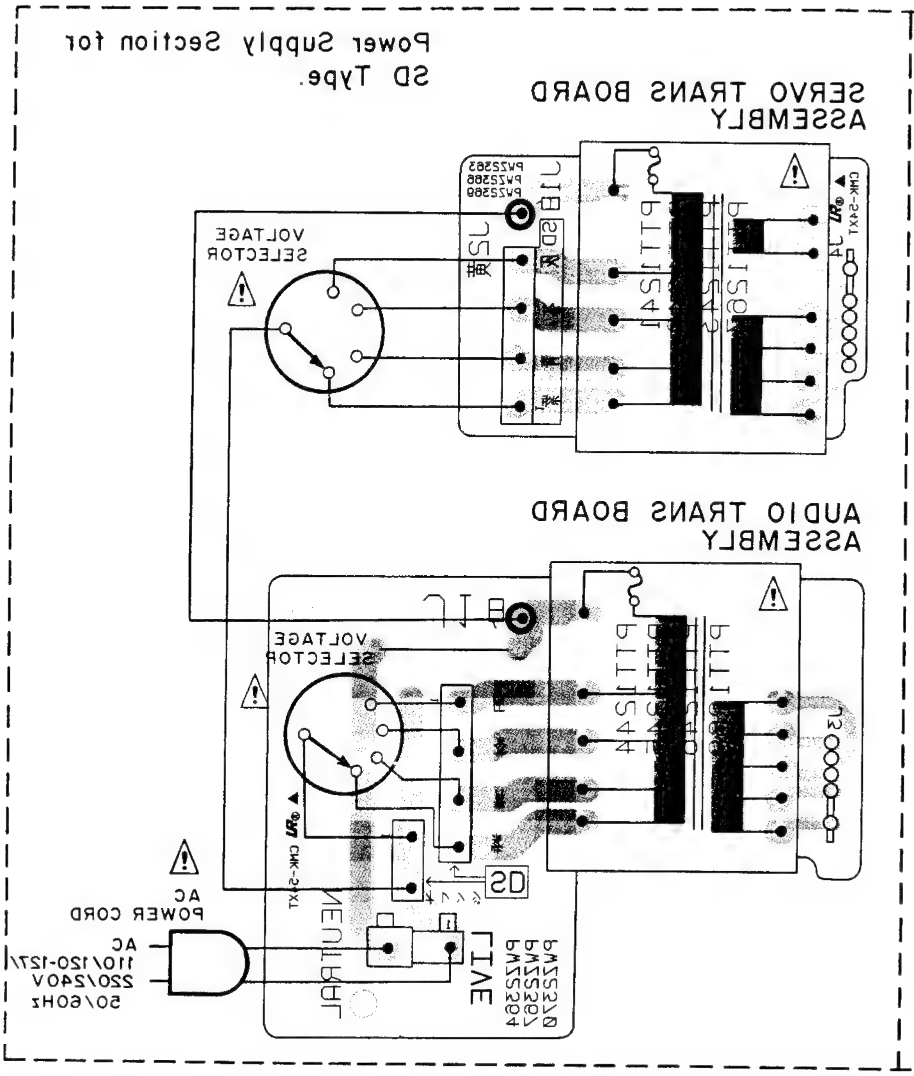
SERVO TRANS BOARD ASSEMBLY



AUDIO TRANS BOARD ASSEMBLY



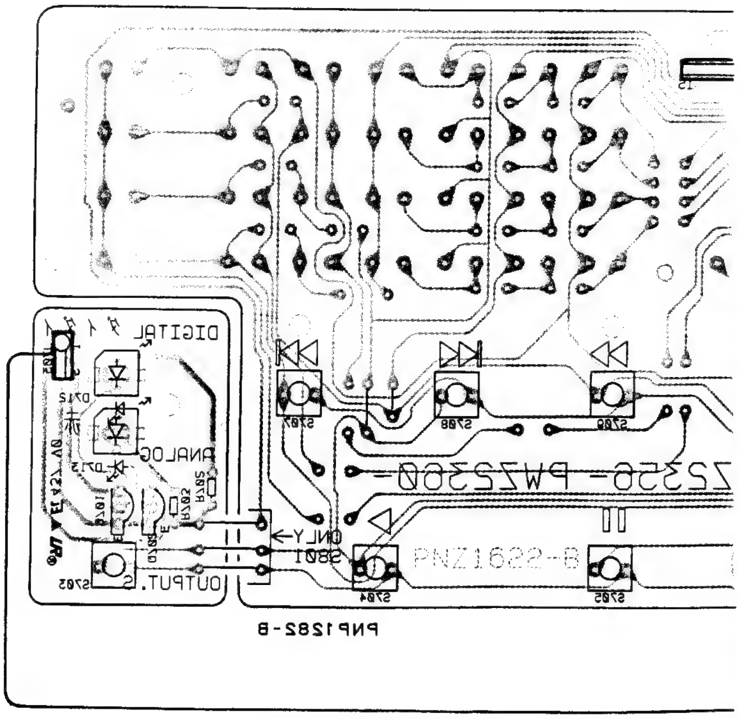




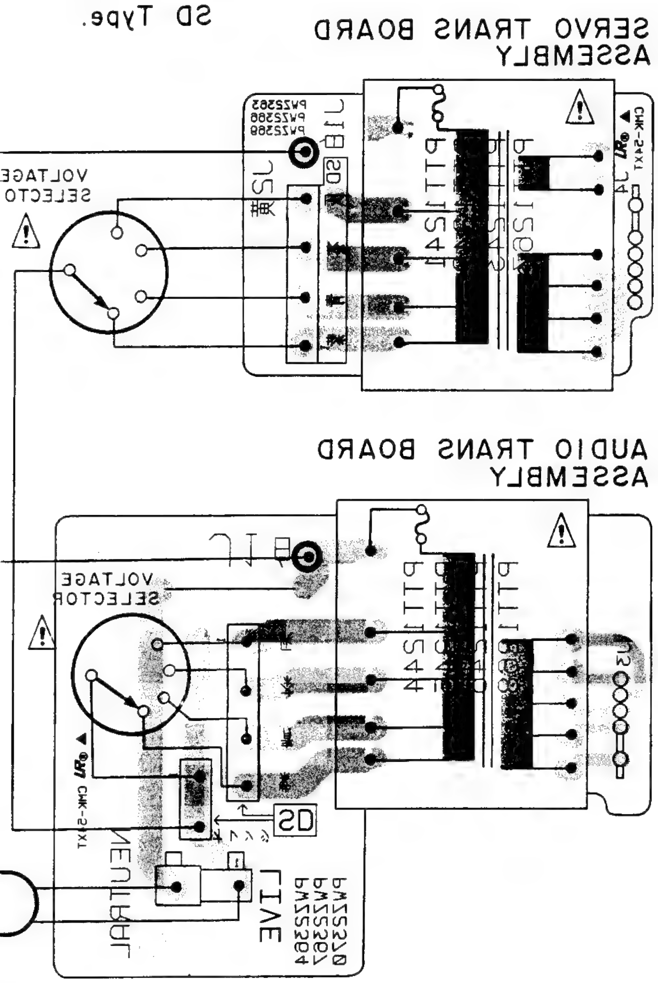
Voltage	Jumper wire Ⓐ position
220–230V	①
230–240V	②

4. Stick the line voltage on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label



Power Supply SD Type.



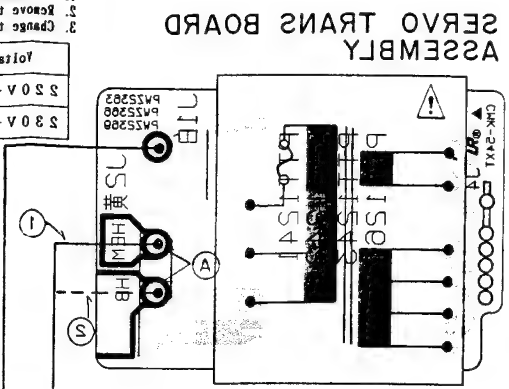
Line Voltage Selection
Line voltage can be changed with the following steps.
1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the position of the jumper wire Ⓐ as follows.

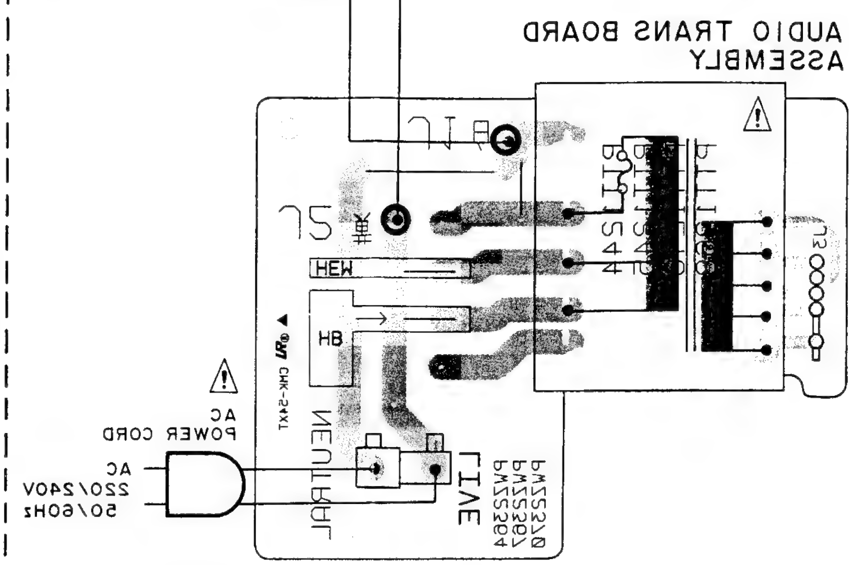
Voltage	Jumper wire Ⓐ position
220V-230V	①
230V-240V	②

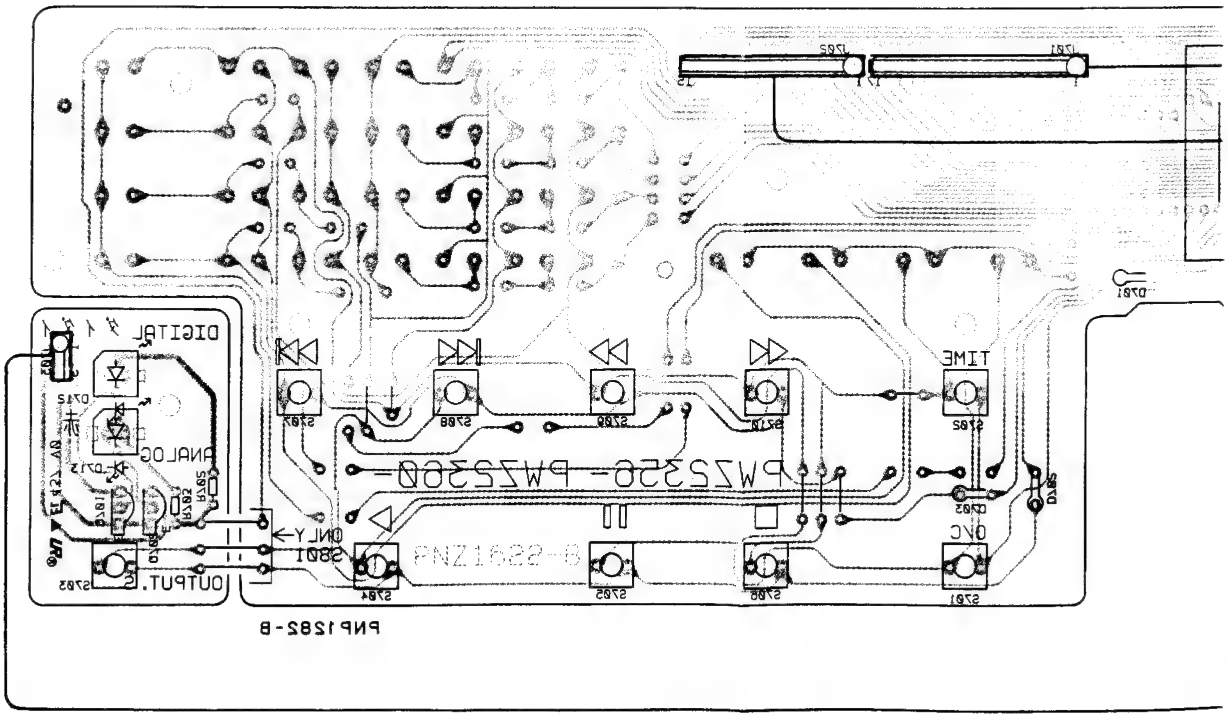
4. Stick the line voltage on the rear panel.

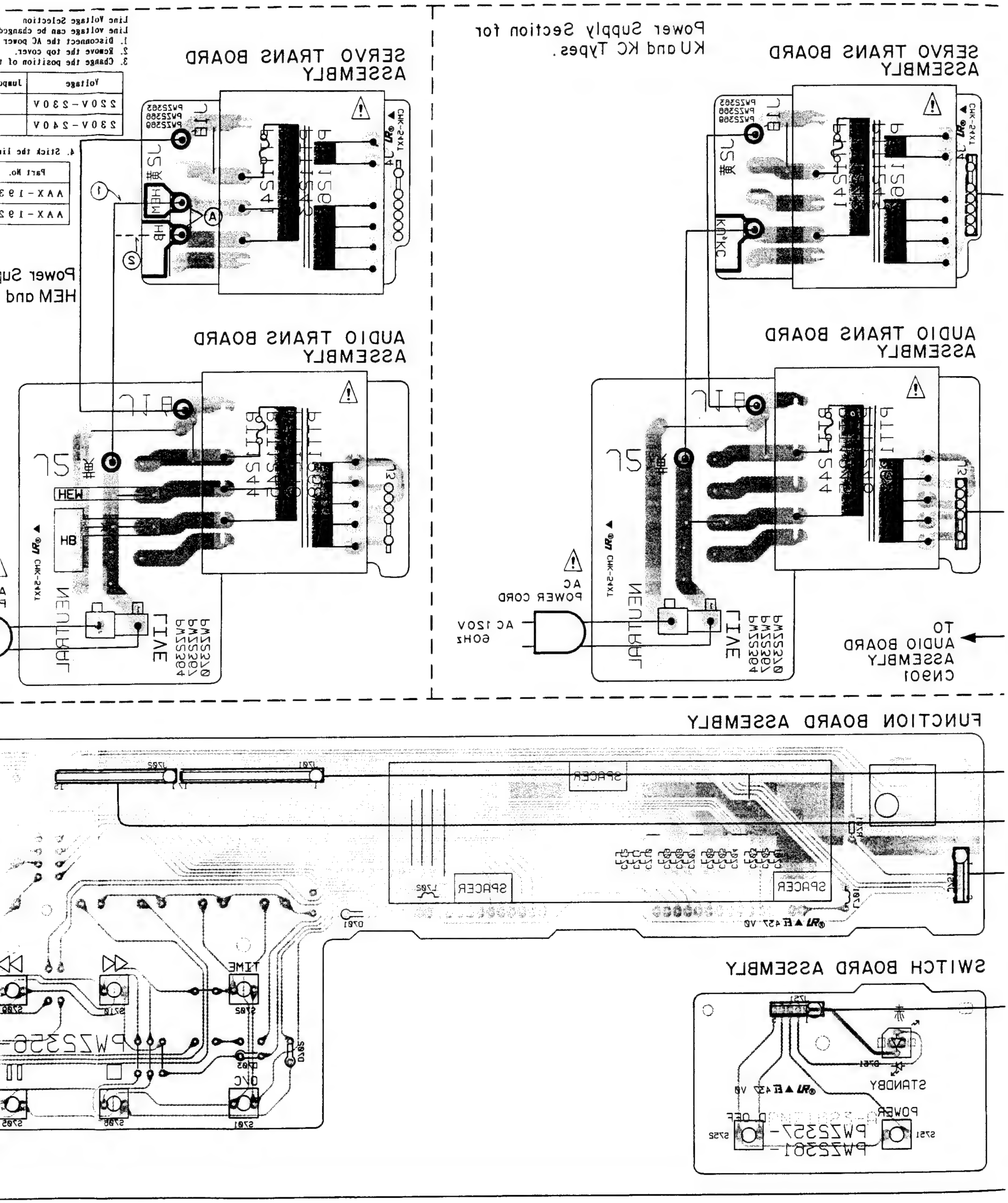
Part No.	Description
AAX-193	220V label
AAX-192	240V label

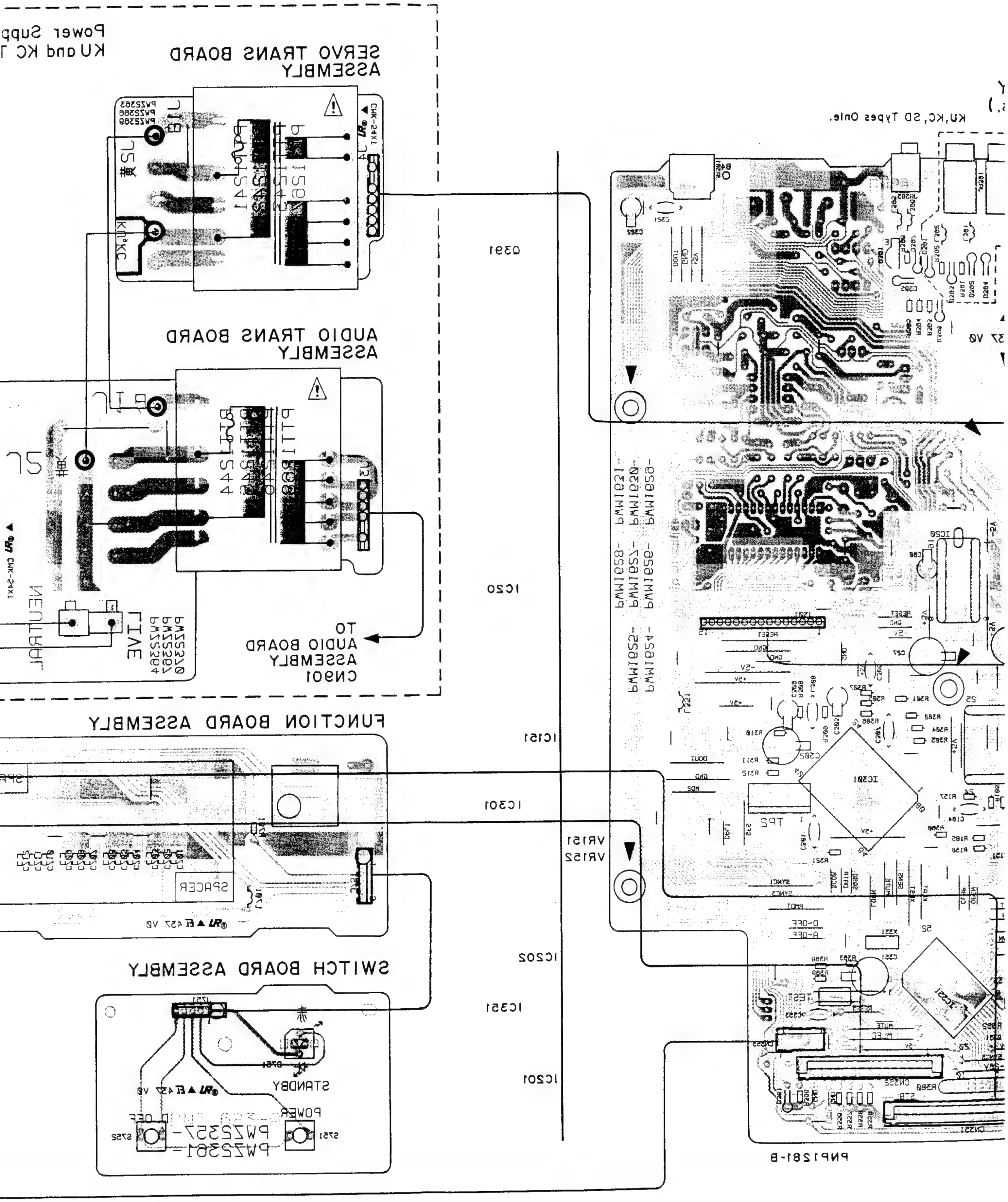
Power Supply Section for HEM and HB Types.

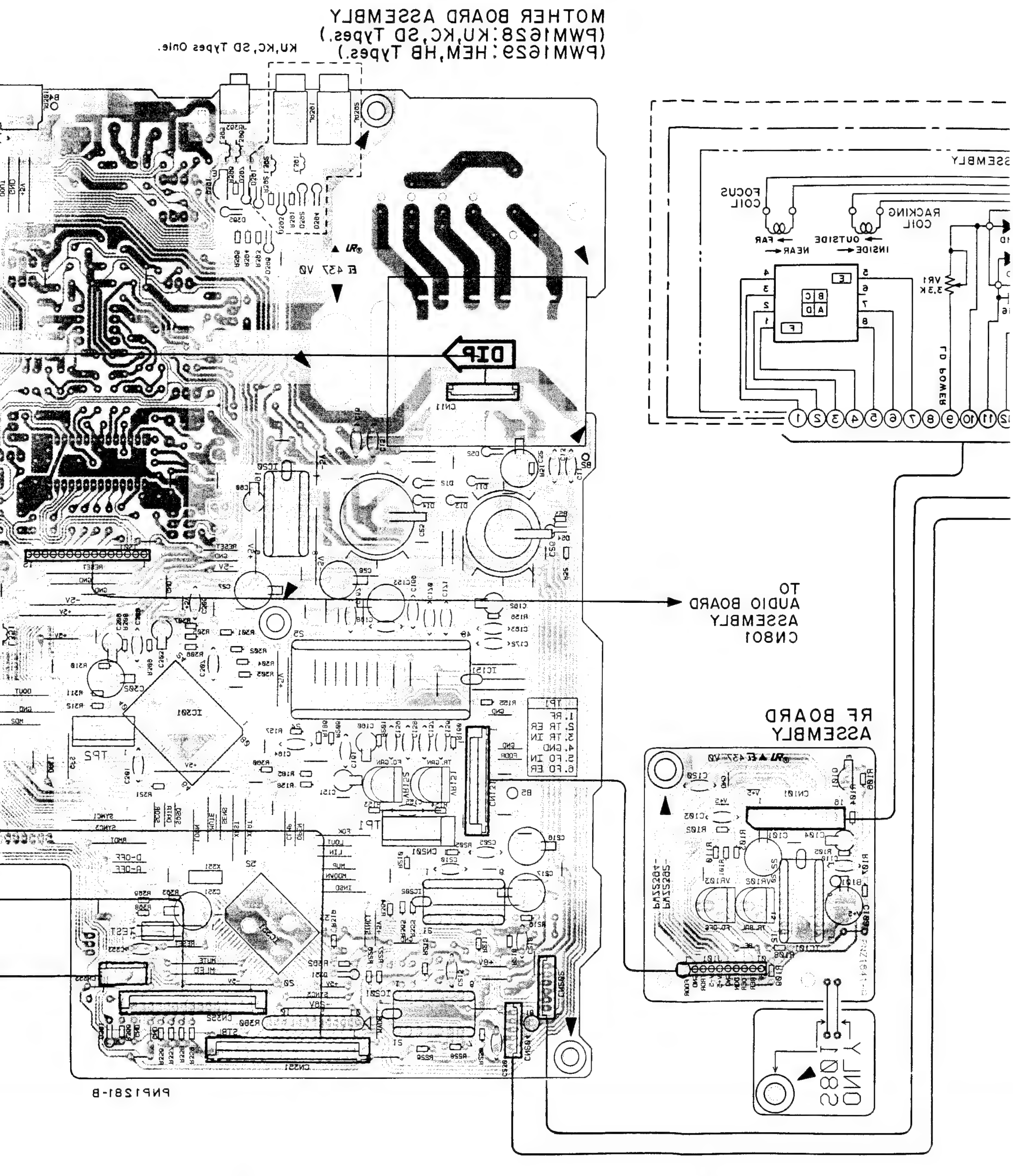






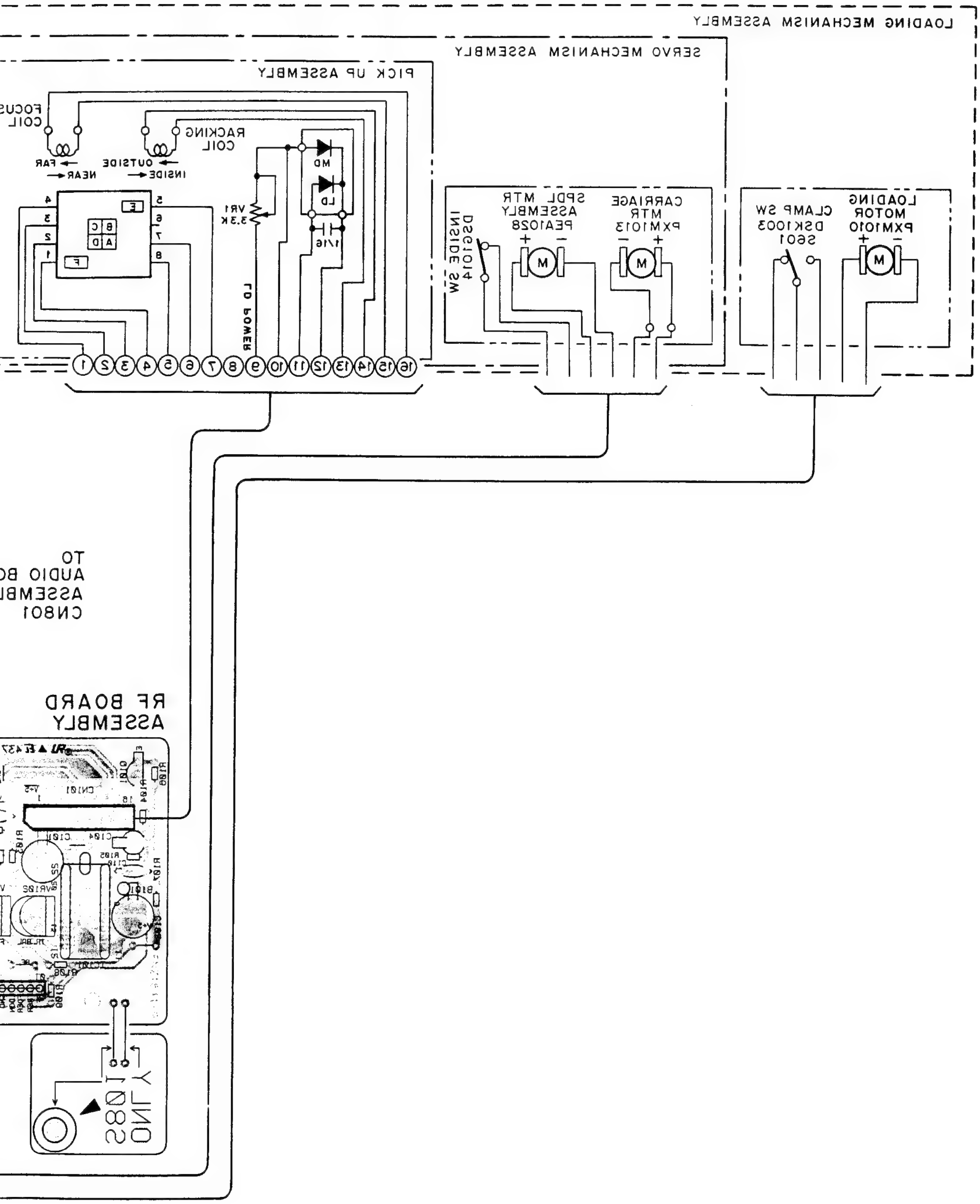

6
8
7
SERVO TRANS BOARD ASSEMBLY
Power Supply Section for KU and KC Types.
SERVO TRANS BOARD ASSEMBLY
AUDIO TRANS BOARD ASSEMBLY
AUDIO TRANS BOARD ASSEMBLY
Line Voltage Selection
Voltage
220V-230V
230V-240V
Power Supply
HEM and
HEM
HB
LIVE
NEUTRAL
AC POWER CORD
AC 120V 60Hz
TO AUDIO BOARD ASSEMBLY CN901
FUNCTION BOARD ASSEMBLY
SPACER
SPACER
SPACER
TIME
SWITCH BOARD ASSEMBLY
STANDBY
POWER
PWZ2357-
PWZ2361-
PWZ2356


Power Supp
KU and KC T
SERVO TRANS BOARD ASSEMBLY
AUDIO TRANS BOARD ASSEMBLY
TO AUDIO BOARD ASSEMBLY CN901
LIVE
NEUTRAL
FUNCTION BOARD ASSEMBLY
SPACER
SWITCH BOARD ASSEMBLY
STANDBY
POWER
PWZ2357-
PWZ2361-
KU,KC,SD Types Only.
Q391
IC20
IC151
IC301
VR151
VR152
IC202
IC351
IC201
PWM1625-
PWM1624-
PWM1628-
PWM1627-
PWM1626-
PWM1629-
PWM1630-
PWM1631-
IC301
TP2
TEST
PNP1281-B



MOTHER BOARD ASSEMBLY
(PWM1628:KU,KC,SD Types.)
(PWM1629:HEM,HB Types.)
KU,KC,SD Types Onle.
TO AUDIO BOARD ASSEMBLY CN801
RF BOARD ASSEMBLY
FOCUS COIL
RACKING COIL
FAR
NEAR
OUTSIDE
INSIDE
VR1 3.3 K
LD POWER
DIP
TP1
1.RF
2.TR ER
3.TR IN
4.GND
5.FO IN
6.FO ER
S80 ONLY
PNP1281-B

- **View from soldering side**



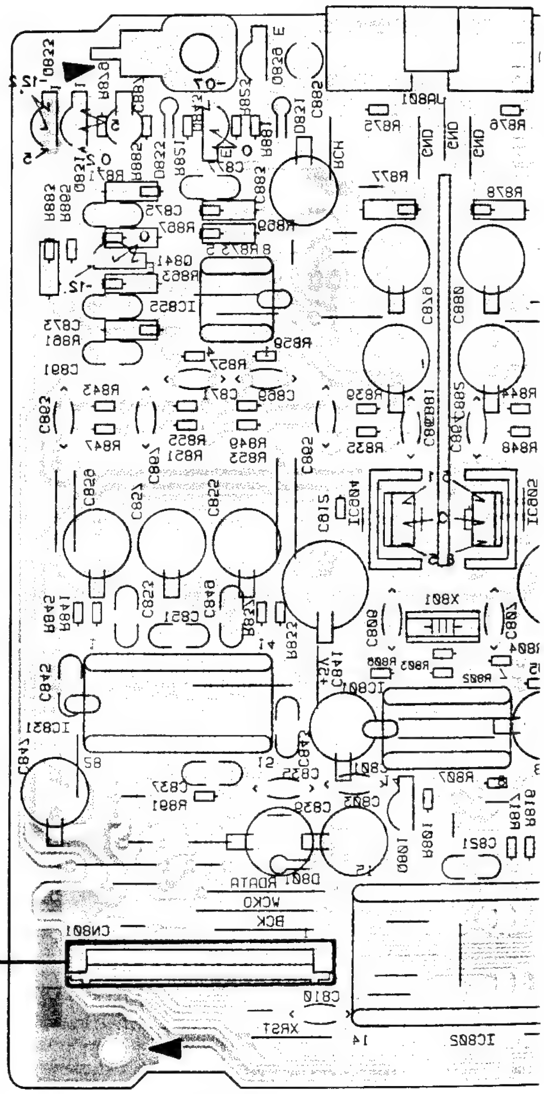
Q831 Q839
Q833 Q843
Q841 IC855
IC904 IC905
IC831 IC801
IC802

IC831, IC832 (PD2028B)

Pin No.	Volts	Pin No.	Volts
1	0	15	5.1
2	2.5	16	5.1
3	2.2	17	4.9
4	0	18	0
5	5.1	19	2.5
6	5.1	20	2.2
7	N.C. (2.3)	21	2.3
8	2.4	22	2.3
9	0	23	0
10	5.1	24	0
11	0	25	N.C. (0)
12	2.2	26	N.C. (3.4)
13	2.5	27	0
14	0	28	5.1

IC802 (PD0116A)

Pin No.	Volts	Pin No.	Volts
1	2.5	15	N.C. (5.0)
2	2.4	16	N.C. (5.0)
3	5.0	17	N.C. (5.0)
4	N.C. (5.0)	18	N.C. (5.0)
5	N.C. (5.0)	19	N.C. (5.0)
6	2.5	20	5.0
7	N.C. (2.5)	21	0
8	0	22	5.0
9	N.C. (3.0)	23	2.1
10	N.C. (5.0)	24	2.1
11	4.9	25	2.5
12	4.9	26	2.3
13	4.9	27	0
14	4.9	28	2.5



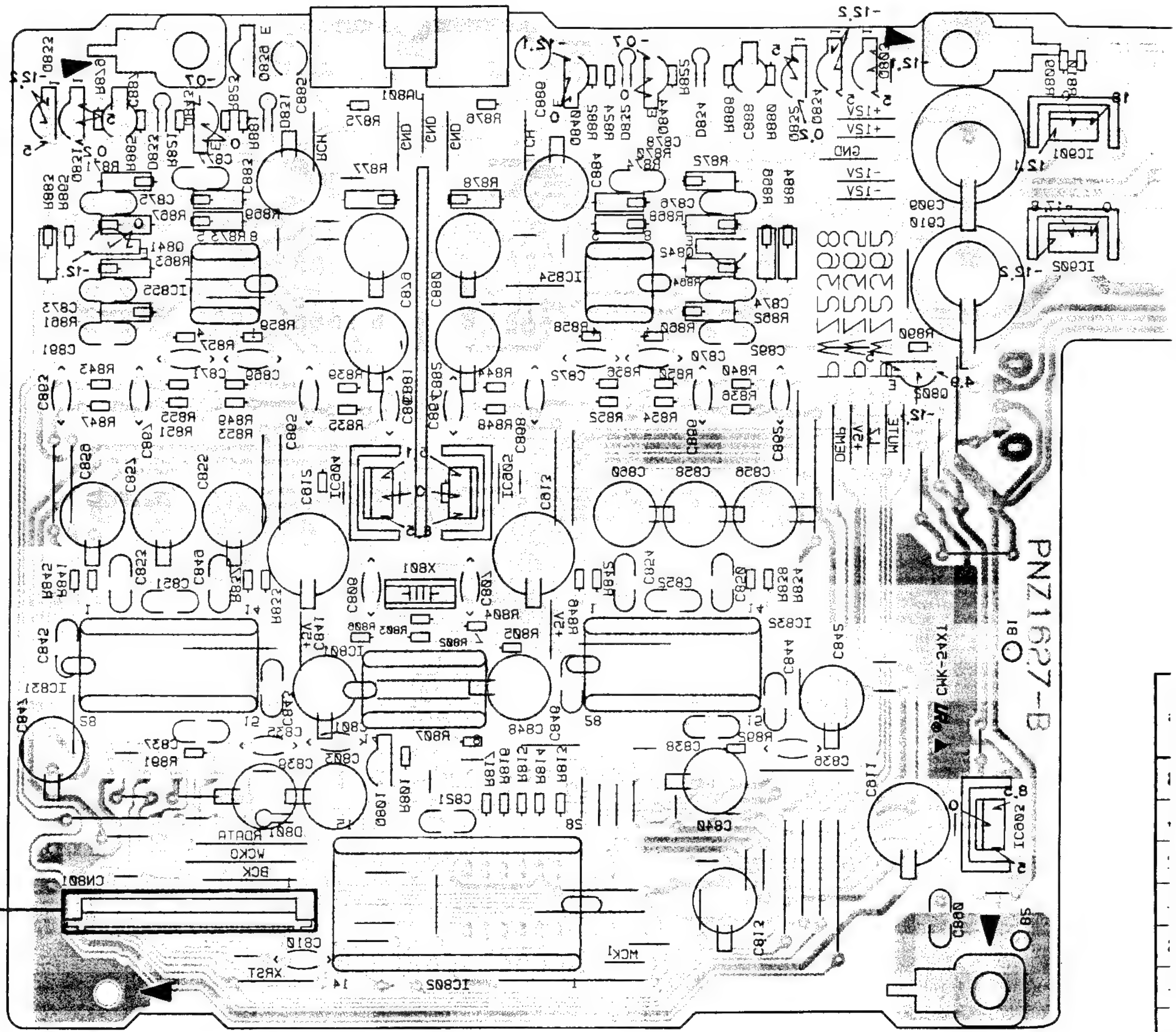
TO MOTHER BOARD ASSEMBLY J301

PNP1283-B

Q834
Q803 Q832 Q844 Q840 Q839 Q831
Q843 Q833
IC901
IC902 Q842 IC854 IC855 Q841
Q802 IC905 IC904
IC903 IC832 IC801 IC831
IC802

IC831, IC832
(PD2028B)

Pin No.	Volts	Pin No.	Vo
1	0	15	
2	2.5	16	
3	2.2	17	
4	0	18	
5	5.1	19	
6	5.1	20	
7	N.C. (2.3)	21	
8	2.4	22	
9	0	23	
10	5.1	24	
11	0	25	N.C.
12	2.2	26	N.C.
13	2.5	27	
14	0	28	



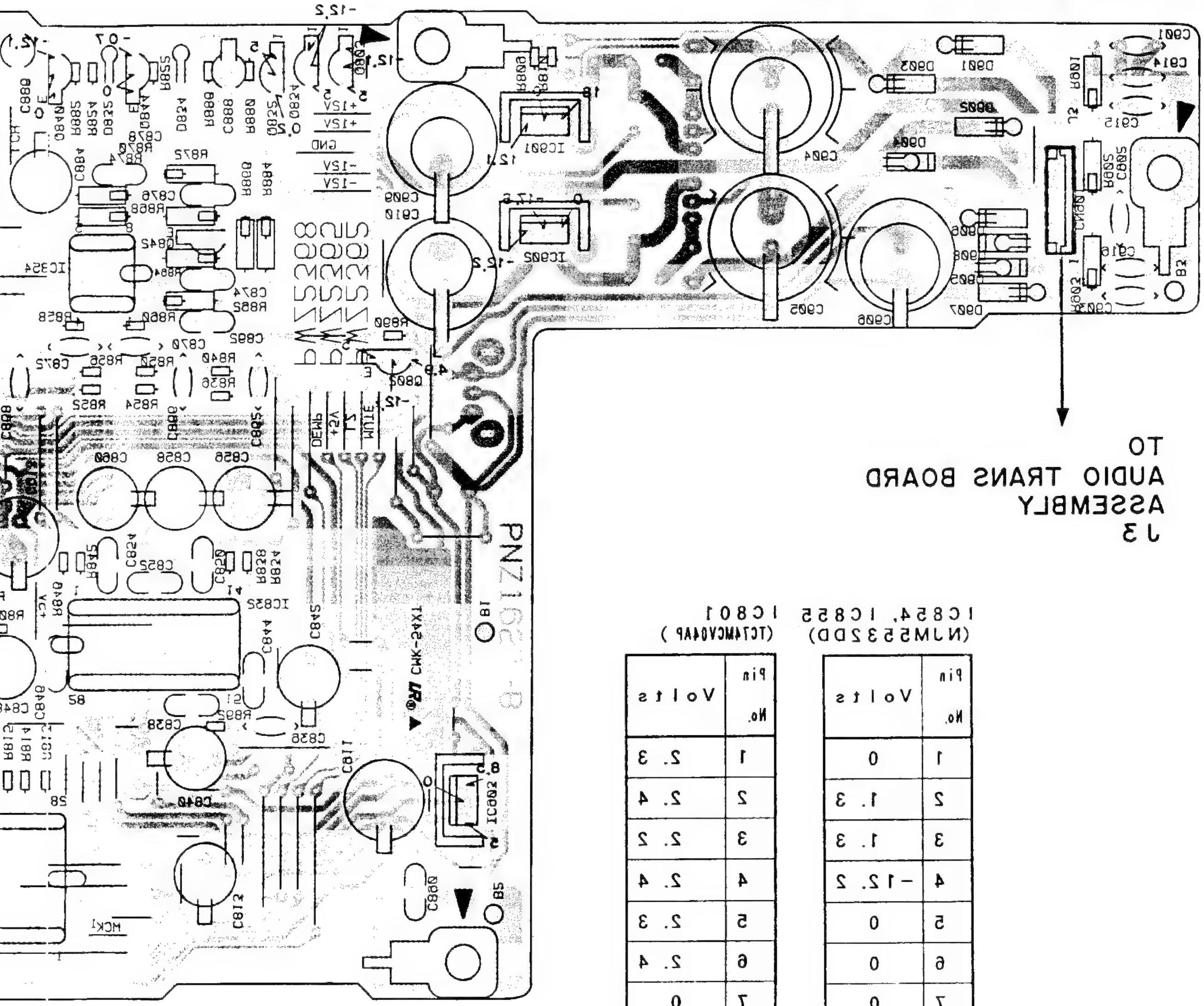
TO MOTHER BOARD ASSEMBLY J301

PNP1283-B

• View from soldering side

Q834
Q803 Q832 Q844 Q840
IC901
IC902 Q842 IC854
Q802
IC903 IC832

AUDIO BOARD ASSEMBLY



TO AUDIO TRANS BOARD ASSEMBLY J3

IC854, IC855 (NJM5532DD)

Pin No.	Volts
1	0
2	1.3
3	1.3
4	-12.2
5	0
6	0
7	0
8	12.1

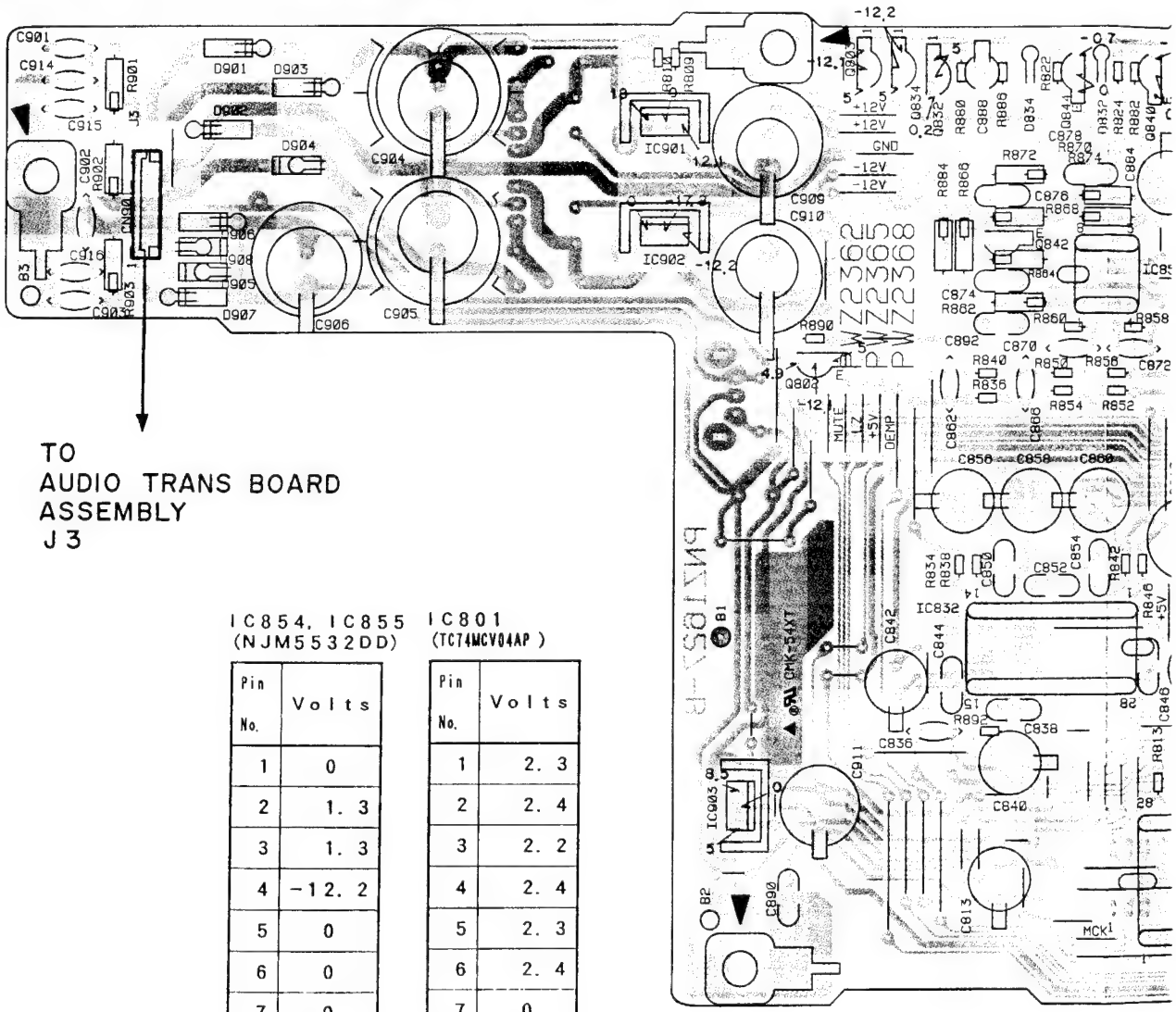
IC801 (TC74HCV04AP)

Pin No.	Volts
1	2.3
2	2.4
3	2.2
4	2.4
5	2.3
6	2.4
7	0
8	N.C. (4.8)
9	0
10	2.5
11	2.3
12	2.5
13	2.3
14	4.8

• View from component side

Q834
Q803 Q832 Q844 Q8
IC901
IC902 Q842 IC854
Q802
IC903 IC832

AUDIO BOARD ASSEMBLY



TO
AUDIO TRANS BOARD
ASSEMBLY
J 3

IC854, IC855 (NJM5532DD)

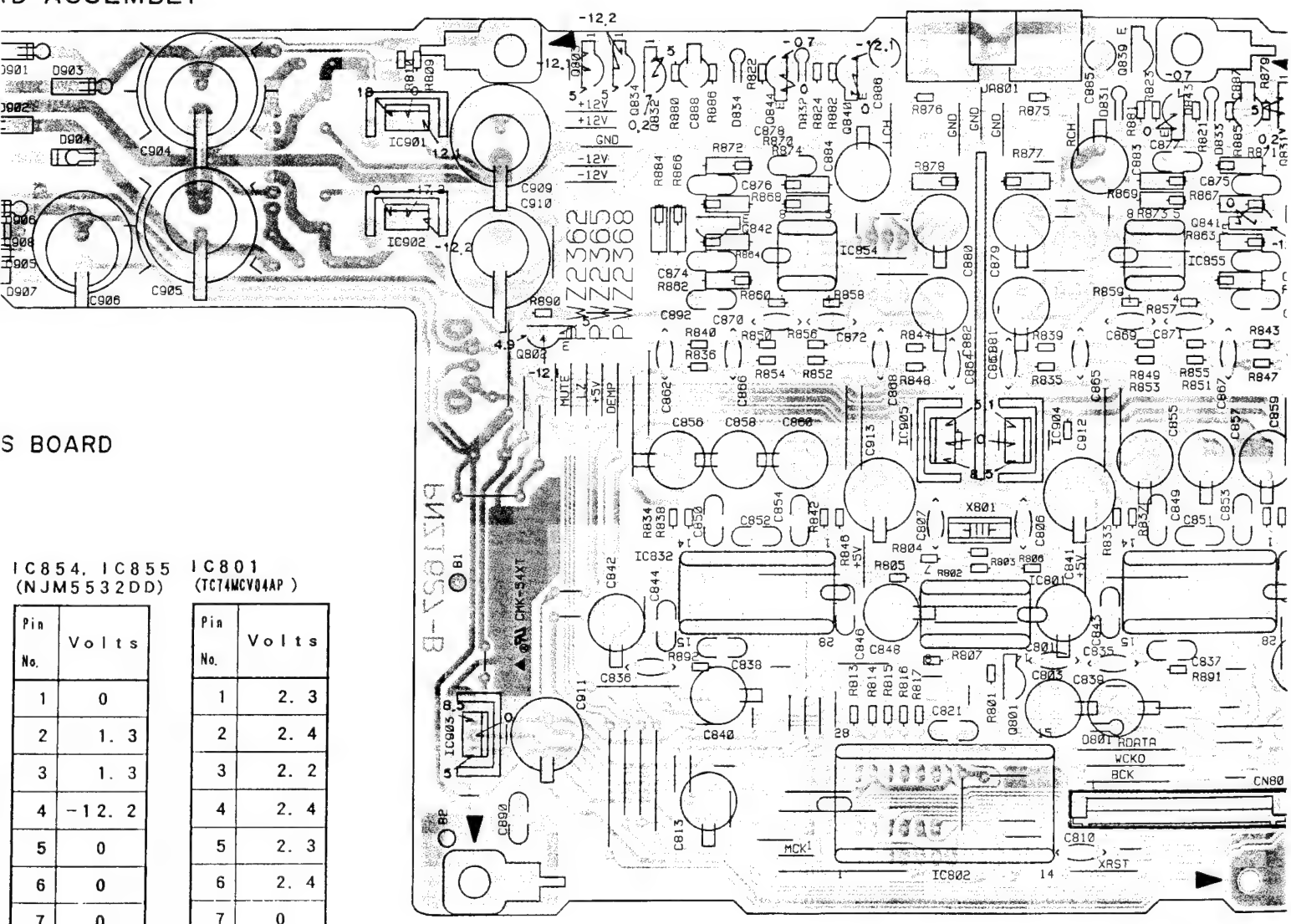
Pin No.	Volts
1	0
2	1. 3
3	1. 3
4	−12. 2
5	0
6	0
7	0
8	12. 1

IC801 (TC74MCV04AP)

Pin No.	Volts
1	2. 3
2	2. 4
3	2. 2
4	2. 4
5	2. 3
6	2. 4
7	0
8	N. C. (4. 8)
9	0
10	2. 5
11	2. 3
12	2. 5
13	2. 3
14	4. 8

Q834
Q803 Q832 Q844 Q840 Q839 Q83
Q843
IC901
IC902 Q842 IC854 IC855 Q84
Q802
IC905 IC904
IC903 IC832 IC801 IC831
IC802

RD ASSEMBLY



PNP1283-B

S BOARD

IC854, IC855 (NJM5532DD)

Pin No.	Volts
1	0
2	1.3
3	1.3
4	-12.2
5	0
6	0
7	0
8	12.1

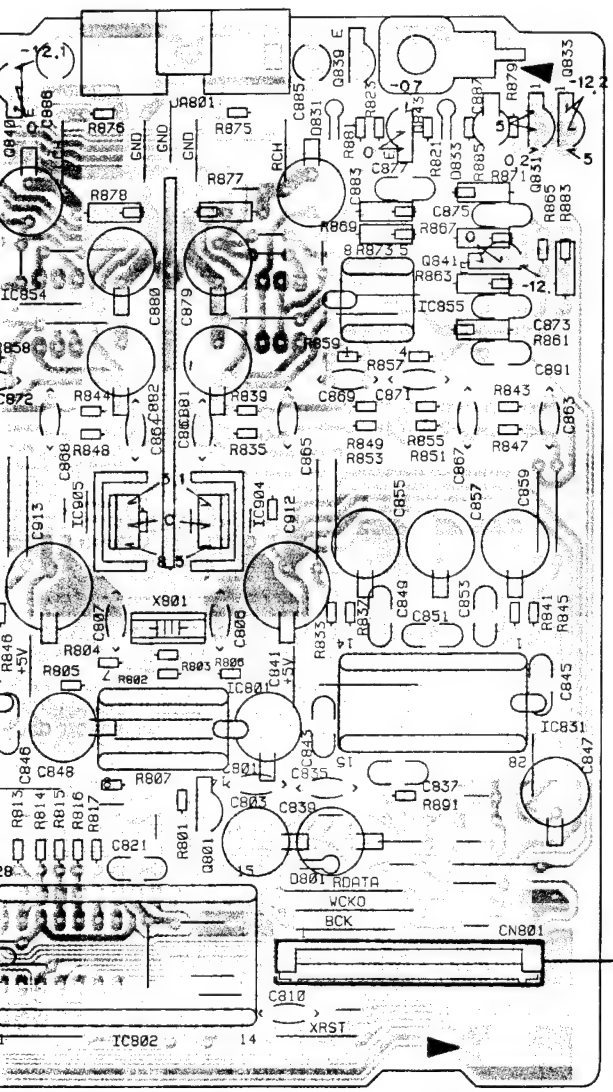
IC801 (TC74MCV04AP)

Pin No.	Volts
1	2.3
2	2.4
3	2.2
4	2.4
5	2.3
6	2.4
7	0
8	N.C. (4.8)
9	0
10	2.5
11	2.3
12	2.5
13	2.3
14	4.8

Q840 Q839 Q831
Q843 Q833

4 IC855 Q841

IC905 IC904
IC801 IC831
IC802



PNP1283-B

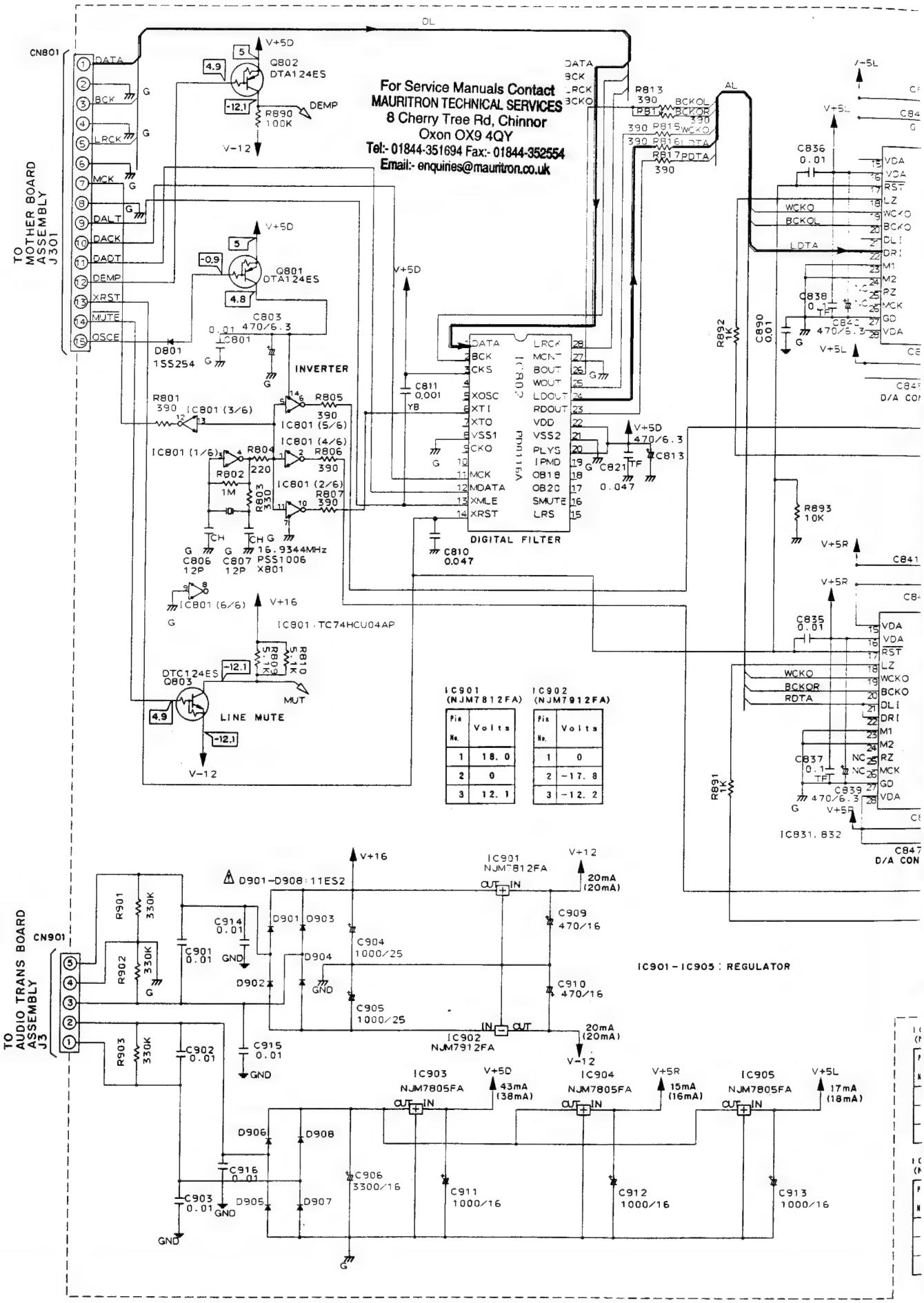
TO
MOTHER BOARD
ASSEMBLY
J301

IC831, IC832
(PD2028B)

Pin No.	Volts	Pin No.	Volts
1	0	15	5. 1
2	2. 5	16	5. 1
3	2. 2	17	4. 9
4	0	18	0
5	5. 1	19	2. 5
6	5. 1	20	2. 2
7	N. C. (2. 3)	21	2. 3
8	2. 4	22	2. 3
9	0	23	0
10	5. 1	24	0
11	0	25	N. C. (0)
12	2. 2	26	N. C. (3. 4)
13	2. 5	27	0
14	0	28	5. 1

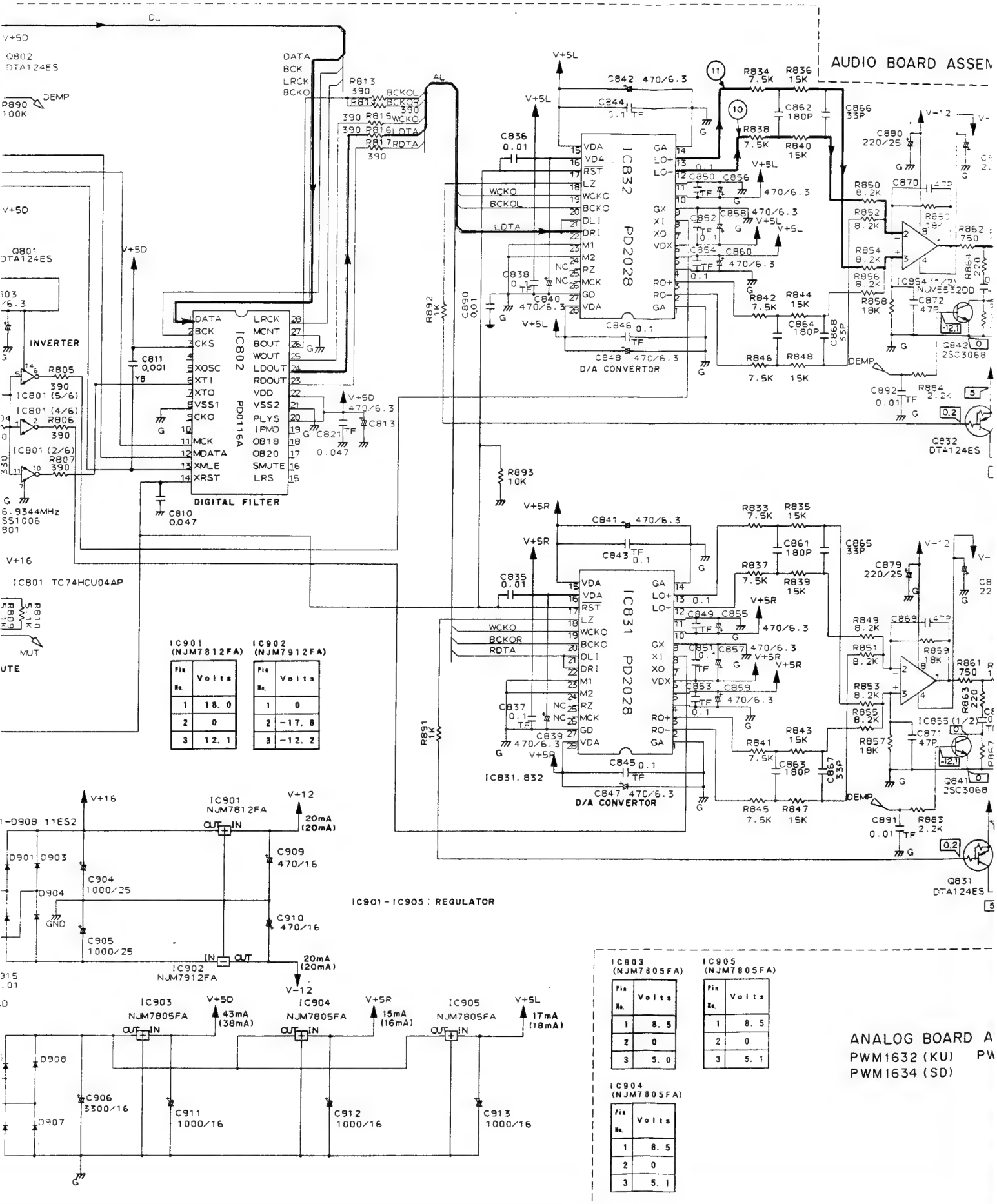
IC802 (PD0116A)

Pin No.	Volts	Pin No.	Volts
1	2. 5	15	N. C. (5. 0)
2	2. 4	16	N. C. (5. 0)
3	5. 0	17	N. C. (5. 0)
4	N. C. (5. 0)	18	N. C. (5. 0)
5	N. C. (5. 0)	19	N. C. (5. 0)
6	2. 5	20	5. 0
7	N. C. (2. 5)	21	0
8	0	22	5. 0
9	N. C. (3. 0)	23	2. 1
10	N. C. (5. 0)	24	2. 1
11	4. 9	25	2. 5
12	4. 9	26	2. 3
13	4. 9	27	0
14	4. 9	28	2. 5



IC901 (NJM7812FA)	
Pin No.	Volts
1	18.0
2	0
3	12.1

IC902 (NJM7912FA)	
Pin No.	Volts
1	0
2	-17.8
3	-12.2



IC901 (NJM7812FA) Pin No.	Volts
1	18.0
2	0
3	12.1

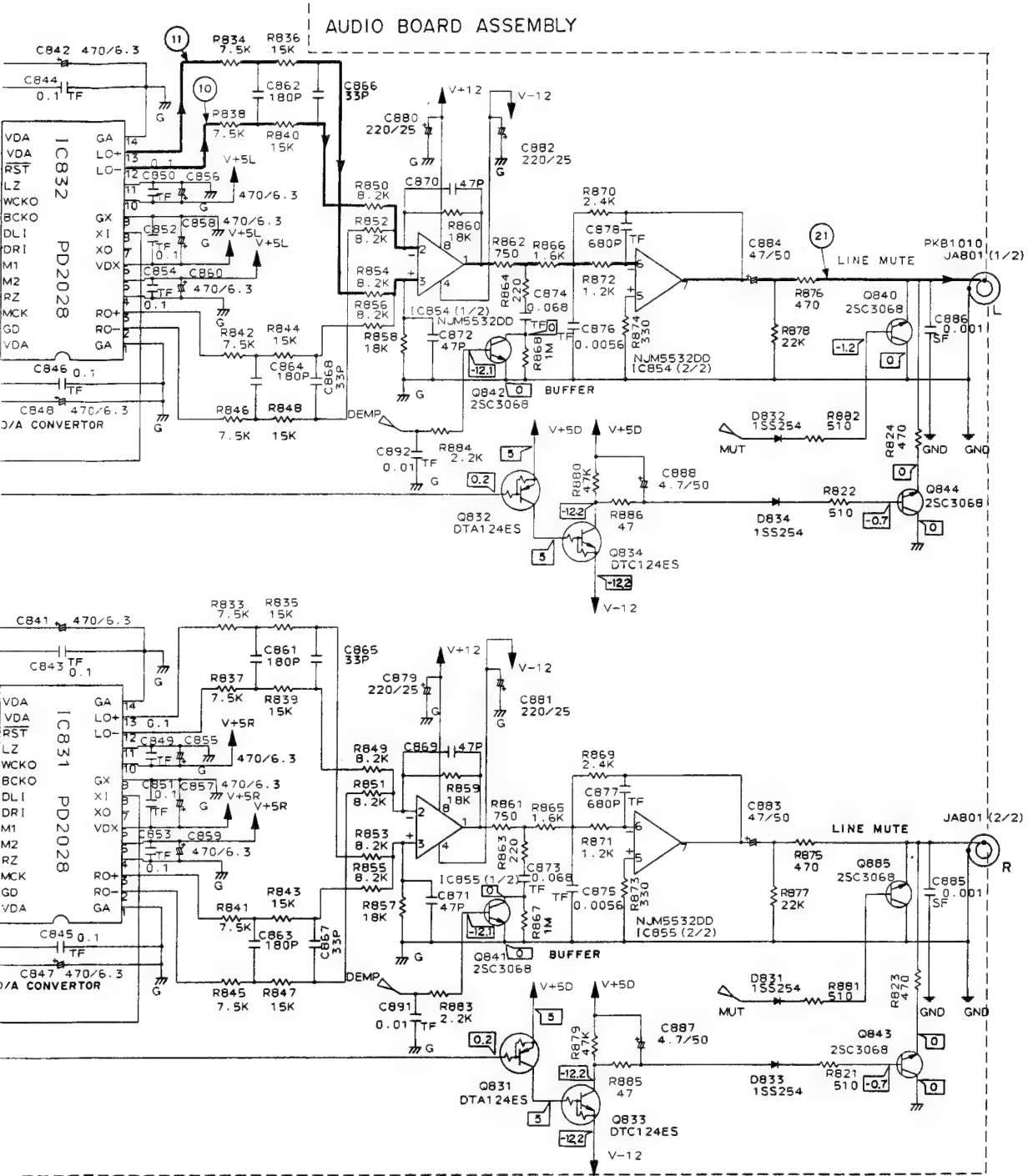
IC902 (NJM7912FA) Pin No.	Volts
1	0
2	-17.8
3	-12.2

IC903 (NJM7805FA) Pin No.	Volts
1	8.5
2	0
3	5.0

IC905 (NJM7805FA) Pin No.	Volts
1	8.5
2	0
3	5.1

IC904 (NJM7805FA) Pin No.	Volts
1	8.5
2	0
3	5.1

AUDIO BOARD ASSEMBLY



IC802 (PD0116A)

Pin No.	Volts	Pin No.	Volts
1	2.5	15	N.C. (5.0)
2	2.4	16	N.C. (5.0)
3	5.0	17	N.C. (5.0)
4	N.C. (5.0)	18	N.C. (5.0)
5	N.C. (5.0)	19	N.C. (5.0)
6	2.5	20	5.0
7	N.C. (2.5)	21	0
8	0	22	5.0
9	N.C. (2.0)	23	2.1
10	N.C. (5.0)	24	2.1
11	4.9	25	2.5
12	4.9	26	2.3
13	4.9	27	0
14	4.9	28	2.5

IC831, IC832 (PD2028B)

Pin No.	Volts	Pin No.	Volts
1	0	15	5.1
2	2.5	16	5.1
3	2.2	17	4.9
4	0	18	0
5	5.1	19	2.5
6	5.1	20	2.2
7	N.C. (2.3)	21	2.3
8	2.4	22	2.3
9	0	23	0
10	5.1	24	0
11	0	25	N.C. (0)
12	2.2	26	N.C. (2.4)
13	2.5	27	0
14	0	28	5.1

IC854, IC855 (NJM5532DD)

Pin No.	Volts
1	0
2	1.3
3	1.3
4	-12.2
5	0
6	0
7	0
8	12.1

IC801 (TC74HC7004AF)

Pin No.	Volts
1	2.3
2	2.4
3	2.2
4	2.4
5	2.3
6	2.4
7	0
8	N.C. (4.8)
9	0
10	2.5
11	2.3
12	2.5
13	2.3
14	4.8

IC903 (NJM7805FA)

Pin No.	Volts
1	8.5
2	0
3	5.0

IC905 (NJM7805FA)

Pin No.	Volts
1	8.5
2	0
3	5.1

IC904 (NJM7805FA)

Pin No.	Volts
1	8.5
2	0
3	5.1

ANALOG BOARD ASSEMBLY

PWM1632 (KU) PWM1633 (HEM/HB)
PWM1634 (SD)

6. ADJUSTMENTS

6.1 ADJUSTMENT METHODS

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

● Adjustment items/verification items and order

Step	Item	Test point	Adjustment location
1	Focus offset adjustment	TP1, Pin 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Grating adjustment	TP1, Pin 2 (TRK. ERR)	Grating adjustment slit
3	Tracking error balance adjustment	TP1, Pin 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
5	RF level adjustment	TP1, Pin 1 (RF)	VR1 (RF level)
6	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Focus error signal verification	TP1, Pin 6 (FCS. ERR)	————

● **Abbreviation table**

FCS. ERR :Focus Error
FCS. OFS :Focus Offset
TRK. ERR :Tracking Error
TRK. BAL :Tracking Balance
FCS. GAN :Focus Gain
TRK. GAN :Tracking Gain
FCS. IN :Focus In
TRK. IN :Tracking In

● Measuring instruments and tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. 12-cm disc (with at least about 70 minutes recording)
5. Low-pass filter (39 kΩ + 0.001 μF)
6. Resistor (100 kΩ)
7. Standard tools

● Test point and adjustment variable resistor positions

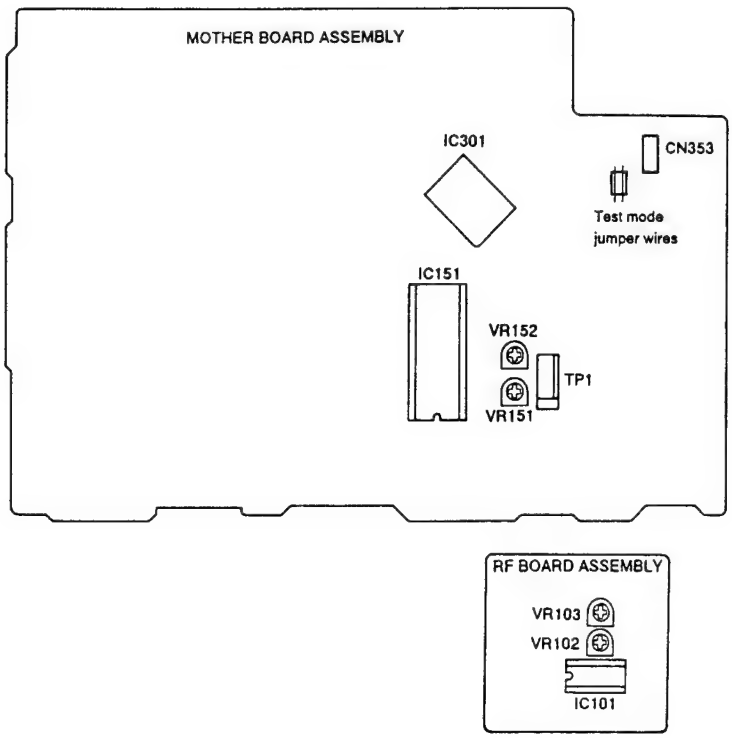


Figure 1 Adjustment Locations

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

[Release from test mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

[Operations of the keys in test mode]

Code	Key name	Function in test mode	Explanation
	PROGRAM	Focus servo close	The laser diode is lit up and the focus actuator is lowered, then raised slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled down, then the actuator is raised and lowered twice and returned to its original position.
▷	PLAY	Spindle servo ON	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.
□□	PAUSE	Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal. If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key name	Function in test mode	Explanation
⏮	TRACK SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
⏭	TRACK SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
⏹	STOP	Stop	Switches off all the servos and initialized. The pickup remains where it was when this key was pressed.
⏏	OPEN/CLOSE	Disc tray open/close	Open/close the disc tray. This key is a toggle key and open/close tray altenately. Pressing this key when the disc is turning stops the disc, then opens the tray. This key operation does not affect the position of the pickup.

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.
Here is the key operation sequence for playing back a disc in test mode.

PROGRAM	Lights up the laser diode and closes the focus servo.
⇩	
PLAY ▷	Starts the spindle motor and closes the spindle servo.
⇩	
PAUSE ▯▯	Closes the tracking servo.

Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Adjustment

● Objective ● Symptom when out of adjustment	Sets the DC offset for the focus error amp. The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR) [Settings] 5 mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stopped (just the Power switch on) RF Board Assembly VR103 (FCS. OFS) None needed

[Procedure]

Adjust VR103 (FCS. OFS) so that the DC voltage at TP1, Pin 6 (FCS. ERR) is −150±50 mV.

2. Grating Adjustment

● Objective	To align the tracking error generation laser beam spots to the optimum angle on the track.		
● Symptom when out of adjustment	Play does not start, track search is impossible, tracks are skipped.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR) via a low pass filter. (See Figure 2) [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open Pickup grating adjustment slit 12-cm disc. (YEDS-7 can not be used.)

[Procedure]

1. Move the pickup to the outer edge of the disc with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key.
2. Press the PROGRAM key, then the PLAY ▷ key in that order to close the focus servo then the spindle servo.
3. Insert an ordinary screwdriver into the grating adjustment slit and adjust the grating to find the null point. For more details, see the next page.
4. If you slowly turn the screwdriver clockwise from the null point, the amplitude of the wave gradually increases, then if you continue turning the screwdriver, the amplitude of the wave becomes smaller again. Turn the screwdriver clockwise from the null point and set the grating to the first point where the wave amplitude reaches its maximum.

   Reference : Figure 3 shows the relation between the angle of the tracking beam with the track and the waveform.

   Note : The amplitude of the tracking error signal is about 3 Vp-p (when a 39 kΩ + 0.001 μF low pass filter is used). If this amplitude is extremely small (2 Vp-p or less), the objective lens or the pickup malfunction may be the cause. If the difference between the amplitude of the error signal at the innermost edge and outermost edge of the disc is more than 10%, the grating is not adjusted to the optimum point, so adjust it again.
5. Return the pickup to more or less midway across the disc with the MANUAL SEARCH REV ◁◁ key, press the PAUSE ▯▯ key and double check that the track number and elapsed time are displayed on the front panel. If they are not displayed at this time or the elapsed time changes irregularly, double check the null point and adjust the grating again.

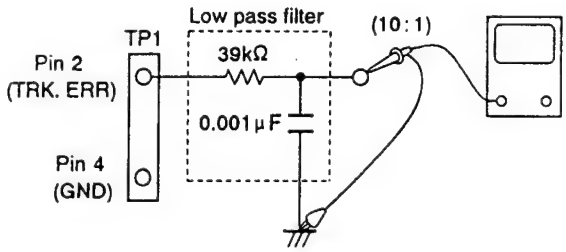
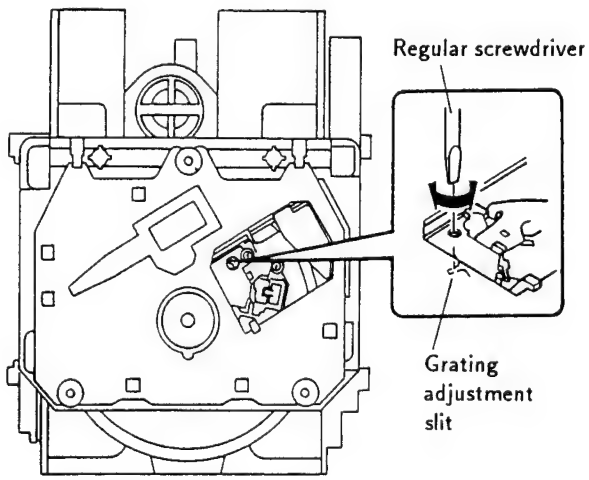


Figure 2



Adjustment locations

[How to find the null point]

When you insert the regular screwdriver into the slit for the grating adjustment and change the grating angle, the amplitude of the tracking error signal at TP1, Pin 2 changes. Within the range for the grating, there are five or six locations where the amplitude of the wave reaches a minimum. Of these five or six locations, there is only one at which the envelope of the waveform is smooth. This location is where the three laser beams divided by the grating are all right above the same track. (See Figure 3.)

This point is called the null point. When adjusting the grating, this null point is found and used as the reference position.

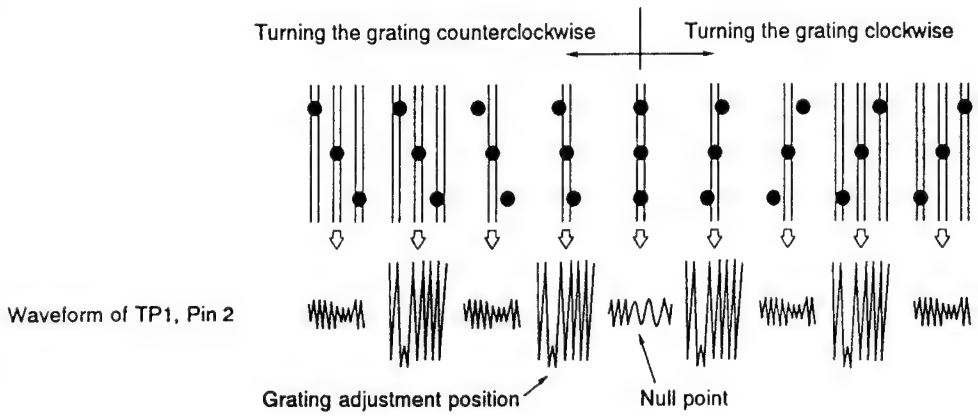
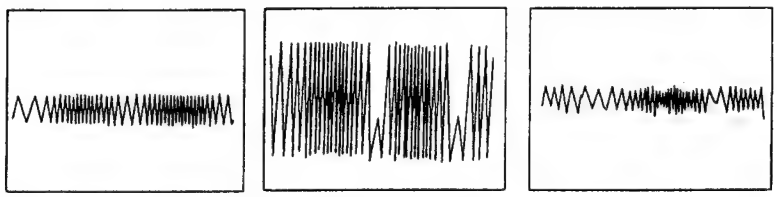


Figure 3



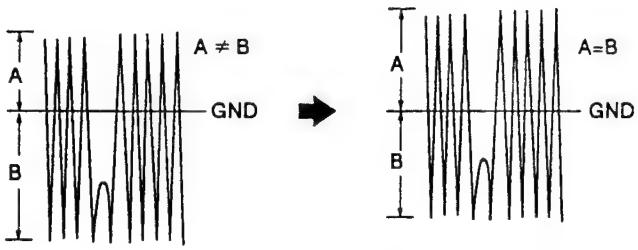
Null point waveform | Maximum amplitude waveform | Waveform other than the null point

3. Tracking Error Balance Adjustment

● Objective	To correct for the variation in the sensitivity of the tracking photodiode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open RF Board Assembly VR102 (TRK. BAL) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key.
2. Press the PROGRAM key, then the PLAY ▷ key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR102 (TRK. BAL) so that the positive amplitude and negative amplitude of the tracking error signal at TP1, Pin 2 (TRK. ERR) are the same (in other words, so that there is no DC component).



When there is a DC component

When there is no DC component

4. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken;some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state	Test mode, play
		● Adjustment location	Pickup radial tilt adjustment screw and tangential tilt adjustment screw
		● Disc	12-cm disc. (YEDS-7 can not be used.)

[Procedure]

1. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key so that the radial/tangential tilt screws can be adjusted. Press the PROGRAM key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the focus servo then the spindle servo and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shappe at the center of the RF signal) can be seen the most clearly(Figure 5).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.

Note:Radial and tangential mean the directions relative to the disc shown in Figure 4.

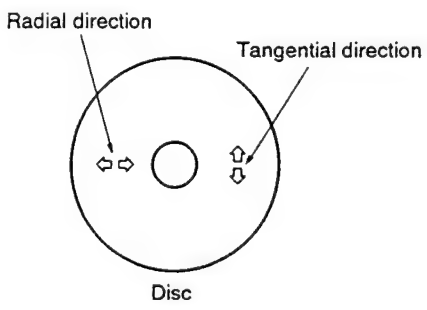
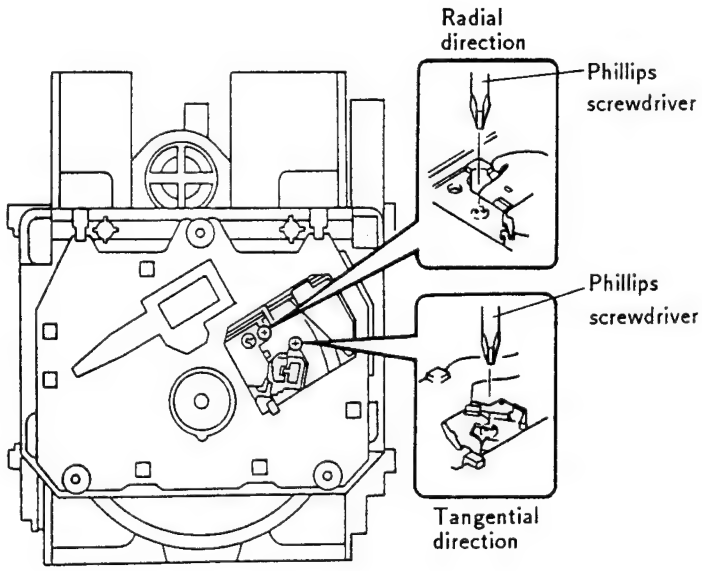


Figure 4



Adjustment locations

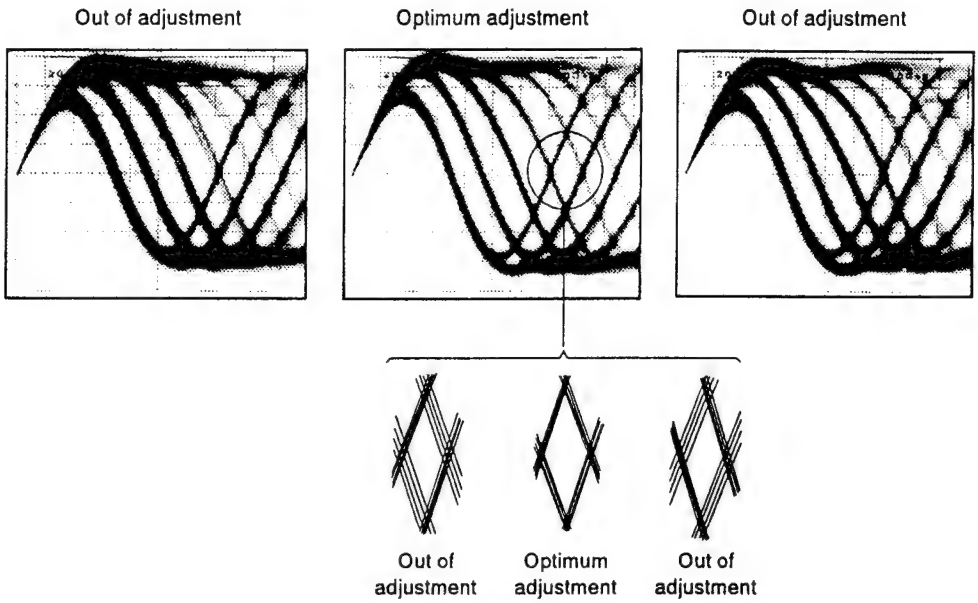


Figure 5 Eye pattern

5. RF Level Adjustment

● Objective	To optimize the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pick Up Assembly VR1 (laser power) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key, then press the PROGRAM key, then the PLAY ▷ key in that order to close the respective servos and put the player into play mode.
2. Adjust VR1 (laser power) so that the RF signal amplitude is 1.2 Vp-p ± 0.1 V.

6. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 6. [Settings] CH1 CH2 20 mV/division 5 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play Mother Board Assembly VR152 (FCS. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PROGRAM key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

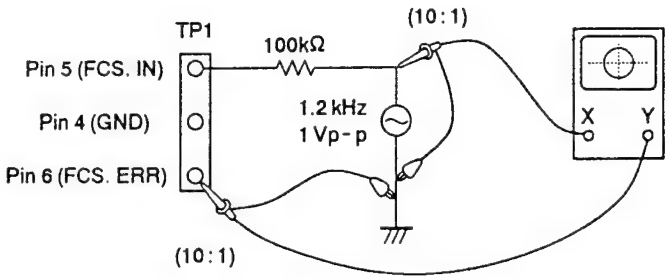
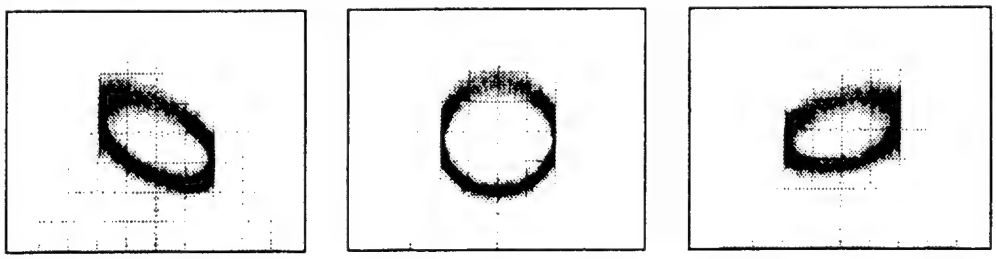


Figure 6

Focus Gain Adjustment



Higher gain | Optimum gain | Lower gain

7. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 7. [Settings] CH1 CH2 50 mV/division 20mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play Mother Board Assembly VR151 (TRK. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PROGRAM key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

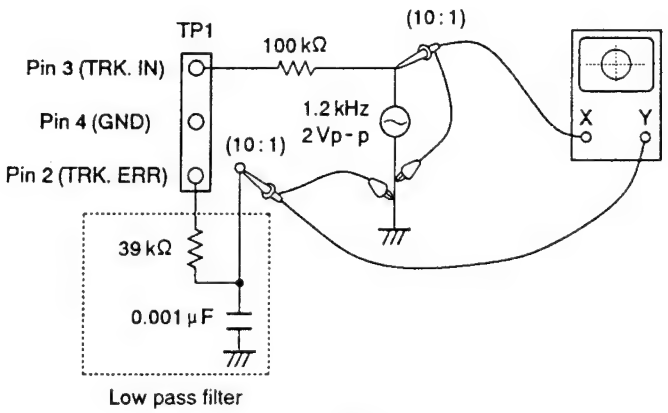


Figure 7

Tracking Gain Adjustment

Higher gain | Optimum gain | Lower gain

8. Focus Error Signal (Focus S Curve) Verification

● Objective ● Symptom when out of adjustment	To judge whether the pickup is ok or not by observing the focus error signal. The pickup is judged from the amplitude of the tracking error signal (as discussed in the section on adjusting the tracking error balance) and the waveform for the focus error signal.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR). [Settings] 100 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stop None YEDS-7

[Procedure]

1. Connect TP1 Pin 5 to ground.
2. Mount the disc.
3. While watching the oscilloscope screen, press the PROGRAM key and observe the waveform in Figure 8 for a moment. Verify that the amplitude is at least 2.5 Vp-p and that the positive and negative amplitude are about equal. Since the waveform is only output for a moment when the PROGRAM key is pressed, press this key over and over until you have checked the waveform.

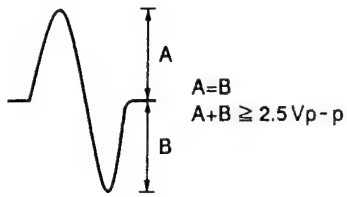


Figure 8

[Judging the pickup]

Do not judge the pickup until all the adjustments have been made correctly. In the following cases, there may be something wrong with the pickup.

1. The tracking error signal amplitude is extremely small (less than 2 Vp-p).
2. The focus error signal amplitude is extremely small (less than 2.5 Vp-p).
3. The positive and negative amplitudes of the focus error signal are extremely asymmetrical (2 : 1 ratio or more).
4. The RF signal is too small (less than 0.8 Vp-p) and even if VR1 (laser power) is adjusted , the RF signal can not be brought up to the standard level.

6. REGLAGES

6.1 MÉTHODES DE RÉGLAGE

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie en présentent aucune anomalie. Par conséquent, ajuster le lecteur correctement en suivant les démarches de réglage.

● Points de réglage/Point et ordre de vérification

Etape	Point	Point d'essai	Emplacement du réglage
1	Réglage du décalage de la mise au point	TP1, Broche 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Réglage du réseau de diffraction	TP1, Broche 2 (TRK. ERR)	Fente de réglage du réseau de diffraction
3	Réglage d'équilibrage d'erreur d'alignement	TP1, Broche 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Réglage d'inclinaison radiale/ tangentielle du capteur	TP1, Broche 1 (RF)	Vis de réglage d'inclinaison radiale, vis de réglage d'inclinaison tangentielle
5	Réglage du niveau RF	TP1, Broche 1 (RF)	VR1 (niveau RF)
6	Réglage de gain de bouncle asservie de la mise au point	TP1, Broche 5 (FCS. IN) TP1, Broche 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Réglage de gain de boucle asservie de l'alignement	TP1, Broche 3 (TRK. IN) TP1, Broche 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Vérification du signal d'erreur de la mise au point	TP1, Broche 6 (FCS. ERR)	————

● **Tableau des abbréviations**

FCS. ERR :Erreur de mise au point
FCS. OFS :Décalage de mise au point
TRK. ERR :Erreur d'alignement
TRK. BAL :Équilibrage d'erreur d'alignement
FCS. GAN :Gain de mise au point
TRK. GAN :Gain d'alignement
FCS. IN :Mise au point correcte
TRK. IN :Alignement correct

● Intruments de mesure et outils

1. Oscilloscope cathodeique à deux faisceaux (sonde 10 : 1)
2. Oscillateur de basse fréquence
3. Disque d'essai (YEDS-7)
4. Disque de 12-cm (avec au moins 70 minutes d'enregistrement)
5. Filtre passe-bas (39 kΩ + 0,001 μF)
6. Résistance (100 kΩ)
7. Outils conventionnels

● Point d'essai et positions de réglage de la résistance variable

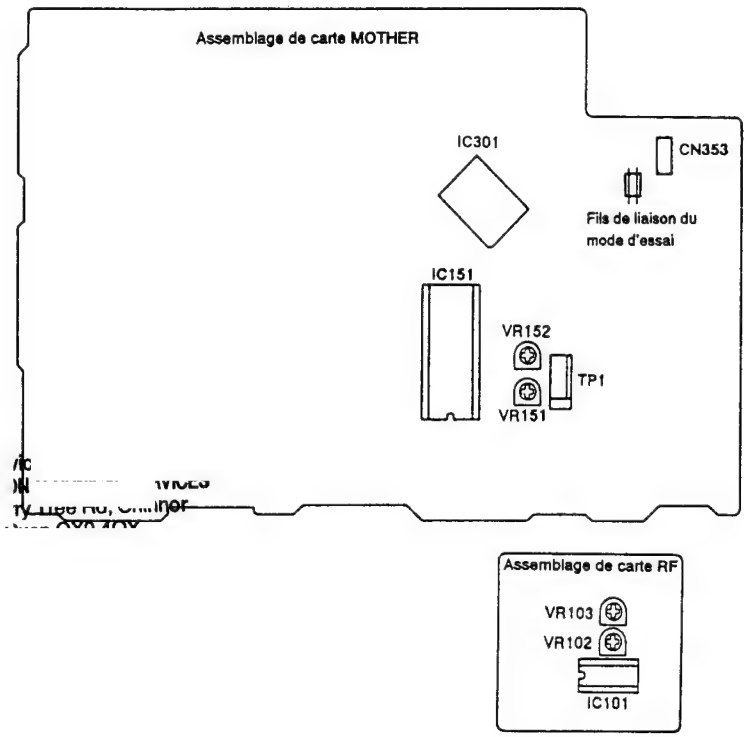


Figure 1 Emplacement des réglages

● Remarques

1. Utiliser une sonde 10:1 pour l'oscilloscope.
2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10:1.

● Mode d'essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire. Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

[Mise en mode d'essai]

Voici la menière de mettre le modèle en mode d'essai.
1.Débrancher le cordon d'alimentation de la prise secteur.
2.Court-circuiter les fils de liaison du mode d'essai. (Voir Figure 1.)
3.Rebrancher le cordon d'alimentation dans la prise secteur.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise souns tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.

[Pour sortir du mode d'essai]

Voici la procédure pour sortir du mode d'essai.
1. Appuyer sur la touche STOP pour arrêter toutes les opérations.
2. Débrancher le cordon d'alimentation de la prise secteur.

[Fonctionnement des touches en mode d'essai]

Code	Nom de la touche	Fonction en mode d'essai	Explications
	PROGRAM	Fermeture du circuit asservi de la mise au point	La diode laser s'allume et l'actuateur de la mise au point s'abaisse, puis se relève lentement et le circuit servo de la mise au point se ferme au point où la lentille de l'objectif se focalise sur le disque. Quand l'appareil est dans cet état, si l'on fait légèrement tourner à la main le disque arrêté, le bruit produit par le circuit servo de la mise au point sera audible. Si ce bruit est perçu, le circuit servo de la mise au point fonctionne correctement. Si cette touche est enclenchée et qu'aucun disque n'est installé, la diode laser s'allume, l'actuateur de la mise au point s'abaisse, se relève, puis s'abaisse une deuxième fois et enfin, revient à sa position de départ.
▷	PLAY	Asservissement de rotation en service	Démarre le moteur de rotation dans le sens des aiguilles d'une montre, quand la rotation du disque atteint la vitesse prescrite (environ 500 tours/min à la circonférence interne) et place le circuit servo de rotation dans une boucle fermée. Attention. Si cette touche est enfoncée et qu'un disque n'est pas installé, le moteur de rotation va tourner à la vitesse maximum. Si le circuit servo de la mise au point ne passe pas comme prévu dans une boucle fermée ou que la diode laser brille dans le miroir à la périphérie externe du disque, le même symptôme se produit.
□□	PAUSE	Ouverture/Fermeture du circuit servo de l'alignement	Le fait d'appuyer sur cette touche quand le circuit servo de la mise au point et de la rotation fonctionnent correctement en boucles fermées, place le circuit servo de l'alignement dans une boucle fermée, fait apparaître, sur le panneau avant, le numéro de la piste en coures de lecture et la durée écoulée, puis sort le signal de lecture. Si la durée écoulée n'est pas affichée ou n'est pas correctement calculée, ou si la reproduction sonore est anormale, il se peut que la diode laser s'active dans la section dépourvue de signaux enregistrés, au bord externe du disque, qu'un ajustement quelconque soit déréglé, ou qu'un autre problème se manifeste. Cette touche est de type à bascule, et ouvre/ferme alternativement le circuit servo de l'alignement. Cette touche est inopérante si un disque n'est pas installé.

Code	Nom de la touche	Founction en mode d'essai	Explications
⏮	TRACK SEARCH REV	Inversion du chariot (vers l'intérieur)	Déplace le capteur vers la périphérie interne du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
⏭	TRACK SEARCH FWD	Inversion du chariot (vers l'extérieur)	Déplace le capteur vers la périphérie externe du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
⏹	STOP	Arrêt	Met tous les circuits servo hors service et les initialise. Le capteur reste lá oú il était quand cette touche a été enclenchée.
⏏	OPEN/CLOSE	Ouverture/Fermeture du plateau á disque	Cette touche est de type à bascule et ouvre/ferme alternativement le plateau. Le fait d'enfoncer cette touche quand le plateau est ouvert le ferme et vice versa. Le fait d'appuyer sur cette touche quand le disque tourne arrête la rotation et ouvre le plateau. La fonction de cette touche n'a aucun effet sur la position du capteur.

[Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo.
Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.

PROGRAM	Allume la diode laser, et ferme le circuit servo de la mise au point.
⇩	
PLAY ▷	Démarre le moteur de rotation et ferme le circuit servo de la rotation.
⇩	
PAUSE ▯▯	Ferme le circuit servo de l'alignement.

Attendre 2 à 3 secondes entre chaque opération.

1. Réglage du dÉcalage de la Mise au Point

● Objectif	Règle le décalage CC de l'amplificateur d'erreur de mise au point.		
● Symptôme quand déréglé	Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR). [Réglages] 5 mV/division 10 ms/division mode CC	● Etat du lecteur	Mode d'essai, arrêté (juste l'interrupteur d'alimentation commuté sur marche)
		● Emplacement du réglage	Assemblage de carte RF VR103 (FCS. OFS)
		● Disque	Aucun requis

[Marche à suivre]

Ajuster VR103 (FCS. OFS) de façon que la tension à TP1 broche 6 (FCS. ERR) soit -150 ± 50 mV.

2. Réglage du Réseau de Diffraction

● Objectif	Pour aligner les points du rayon laser producteur d'erreur d'alignement sur l'angle optimum de la piste.		
● Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible, les pistes sont sautées.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR) via un filtre passe-bas. (Voir Figure 2) [Réglages] 50 mV/division 5 ms/division mode CC	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert. Fente de réglage du réseau de diffraction du capteur. Dans de 12cm. (il est impossible d'employer le disque YEDS-7).

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
2. Appuyer sur la touche PROGRAM, puis sur la touche PLAY ▷, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Insérer un tournevis ordinaire dans le réseau de diffraction pour trouver le point zéro. Pour plus de détails, voir page suivante.
4. Si l'on tourne lentement le tournevis dans le sens des aiguilles d'une montre à partir du point zéro, l'amplitude de l'onde augmente graduellement et si l'on continue à tourner le tournevis, l'amplitude de l'onde diminue de nouveau. Tourner le tournevis dans le sens des aiguilles d'une montre à partir du point zéro et régler le réseau de diffraction au premier point où l'amplitude de l'onde atteint son maximum.

   Référence: La Figure 3 illustre la relation entre l'angle du faisceau de l'alignement et la piste et la forme d'onde.

   Remarque: L'amplitude du signal d'erreur d'alignement se situe aux environs de 3 Vc-c (quand un filtre passe-bas de 39 kΩ ±0,001 μF est utilisé). Si cette amplitude est extrêmement petite (2 Vc-c ou moins), la lentille d'objectif ou du capteur resque de mal fonctionner. Si la différence entre l'amplitude du signal d'erreur au bord le plus intérieur et au bord le plus extérieur du disque est supérieure à 10%, ceci signifie que le réseau de diffraction n'est pas réglé à son point optimum. Dans ce cas, recommencer le réglage.
5. Replacer le capteur plus ou moins à mi-chemin sur le disque par la touche MANUAL SEARCH REV ◁◁, appuyer sur la touche PAUSE ▯▯ et vérifier que le numéro de piste et la durée écoulée sont affichés sur le panneau avant. Si ces paramètres 'apparaissent pas ce moment, ou que la durée écoulée change de manière irrégulière, vérifier le point zéro et recommencer le réglage du réseau de diffraction.

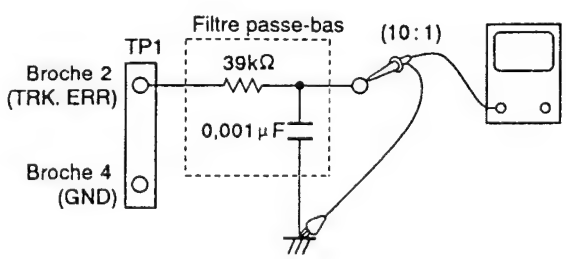
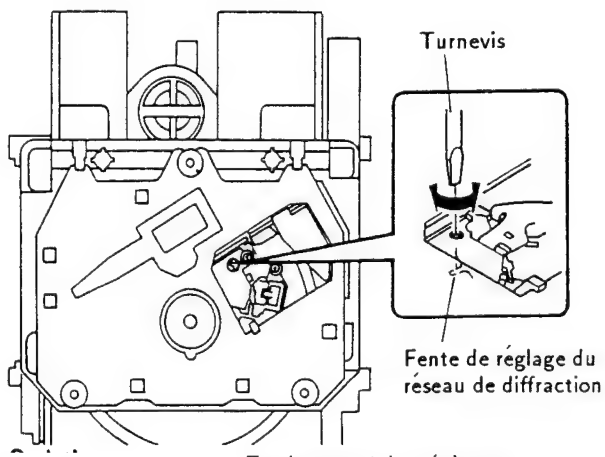


Figure 2



Emplacement des réglages

[Repérage du point zéro]

Quand le tournevis est introduit dans la fente de réglage du réseau de diffraction et que l'angle du réseau de diffraction est modifié, l'amplitude du signal d'erreur d'alignement à TP1, broche 2, change. Dans les limites de la plage du réseau de diffraction, il existe six emplacements où l'amplitude de l'onde atteint le minimum. Mais l'enveloppe de la forme d'onde n'est régulière qu'à un seul de ces emplacements. Ce point se situe à l'endroit où les trois rayons laser, divisés par le réseau de diffraction, se situent exactement sur la même piste (voir Figure 3).
Ce point s'appelle le point zéro. Lors du réglage du réseau de diffraction, ce point zéro est repéré et utilisé comme position de référnce.

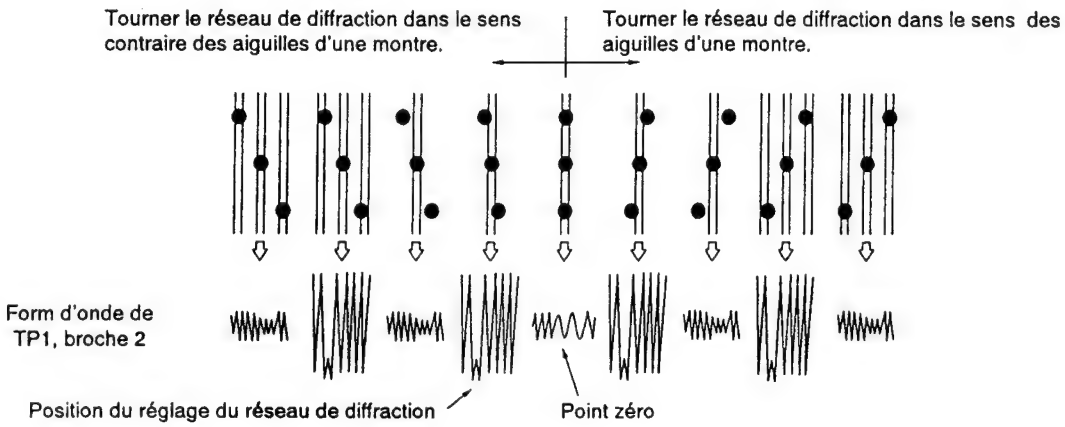
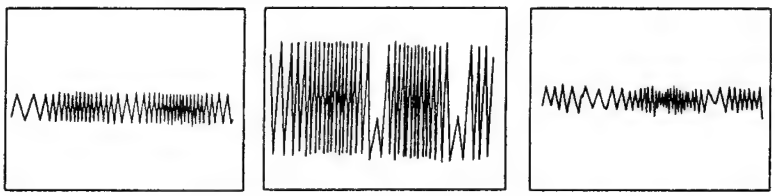


Figure 3

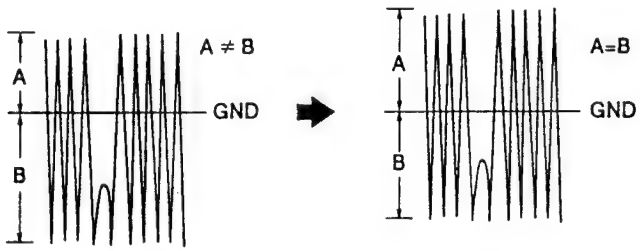


3. Réglage d'Équilibrage d'Erreur d'Alignement

● Objectif	Pour corriger la variation de sensibilité de la photodiode d'alignement.		
● Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR). Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas. [Réglages] 50 mV/division 5 ms/division mode CC	● Etat du lecteur	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert.
		● Emplacement du réglage	Assemblage de carte RF VR102(TRK. BAL)
		● Disque	YEDS-7

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
2. Appuyer sur la touche PROGRAM, puis sur la touche PLAY ▷, dans cet ordre, pour fermeer le circuit servo de la mise au point, puis celui de la rotation.
3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
4. Ajuster VR102 (TRK. BAL) de façon que l'amplitude positive et l'amplitude négative du signal d'erreur d'alignement à TP1, broche 2 (TRK. ERR) soient identiques (c'est-à-dire, qu'il n'y ait aucun composant CC).



S'il y a un composant CC　　S'il n'y a pas de composant CC

4. Réglage d'Inclinaison Radiale/Tangentielle du Capteur

• Objectif	Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent vericalement le disque et permettre ainsi la lecture optimum des signaux RF.		
• Symptôme quand déréglé	Son interrompu ; certains disques peuvent être lus et pas d'autres.		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF). [Réglages] 20 mV/division 200 ns/division mode CA	• Etat du lecteur	Mode d'essai, lecture
		• Emplacement du réglage	Vis de réglage d'inclinaison radiale. Vis de réglage d'inclinaison tangentielle.
		• Disque	Disque de 12cm. (il est impossible d'employer le disque YEDS-7.)

[Marche à suivre]

1. Dans le cas d'un lecteur multidisque, utiliser la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁ de façon que les vis de réglage d'inclinaison radiale et tangentielle puissent être réglées
   Appuyer sur la touche PROGRAM, PLAY ▷ et PAUSE ▯▯ dans cet ordre, afin de fermer le circuit servo de la mise au point, puis celui de la rotation et placer le lecteur en mode de lecture.
2. D'abord, ajuster la vis d'inclinaison radiale à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.
3. Ensuite, ajuster la vis d'inclinaison tangentielle à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible (Figure 5).
4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.
5. Lorsque le réglage est terminé, bloquer les vis de réglage radiale et tangentielle.

Remarque: "Radiale" et "tangentielle" se rapportent aux sens par rapport au disque illustré à la Figure 4.

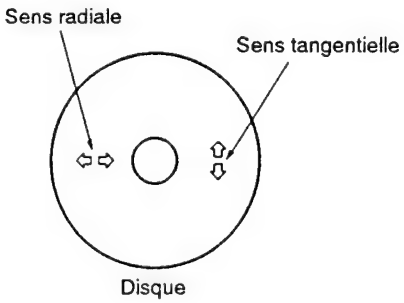
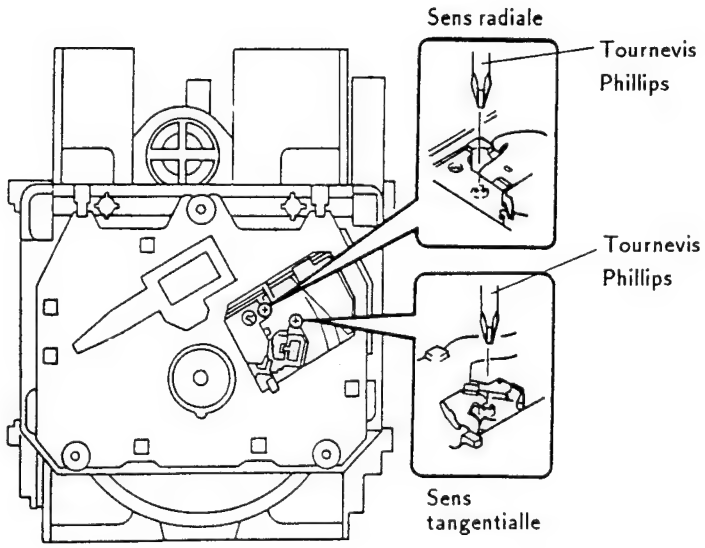


Figure 4



Emplacements des réglages

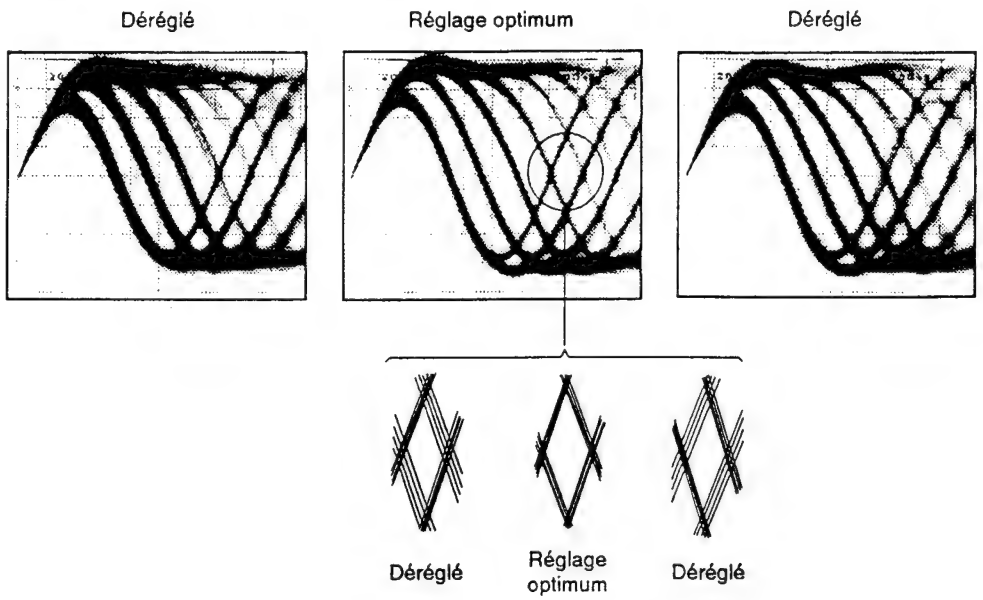


Figure 5 Motif en oeil

5. Réglage du Niveau RF (Niveau RF)

● Objectif	Pour optimaliser l'amplitude du signal RF de lecture		
● Symptôme quand déréglé	Pas de lecture ni de recherche		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF). [Réglages] 50 mV/division 10 ms/division mode CA	● Etat du lecteur	Mode d'essai, lecture
		● Emplacement du réglage	Assemblage de tête de lecture VR1 (alimentation du laser)
		● Disque	YEDS-7

[Marche à suivre]

1. Placer le capteur à mi-chemin sur le disque (R=35 mm) à l'aide de la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
   Ensuite, appuyer sur la touche PROGRAM, puis sur la touche PLAY ▷, dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecteur.
2. Ajuster VR1 (alimentation du laser) de façon que l'amplitude du signal RF atteigne 1,2 Vc-c ± 0,1 V.

6. Réglage de Gain de Boucle Asservie de la Mise au Point

● Objectif	Pour optimaliser le gain de la boucle d'asservissement de la mise au point.		
● Symptôme quand déréglé	La lecture ne commence pas ou l'actuateur de la mise au point est parasité.		
● Raccordement des instruments de mesure	Voir Figure 6. [Réglages] GAN. 1 GAN. 2 20 mV/division 5mV/division mode X - Y	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture Assemblage de carte MOTHER VR152 (FCS. GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PROGRAM, la touche PLAY ▷ , puis sur la touche PAUSE ▯▯ , dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR152 (FCS. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

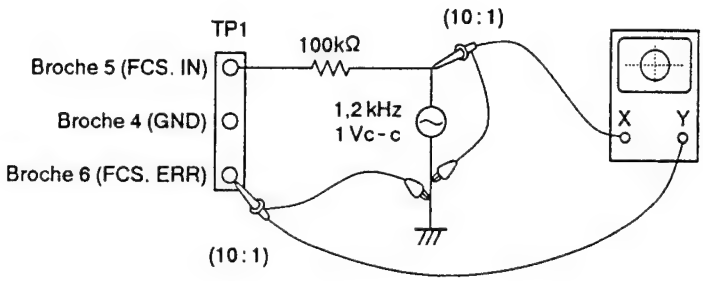
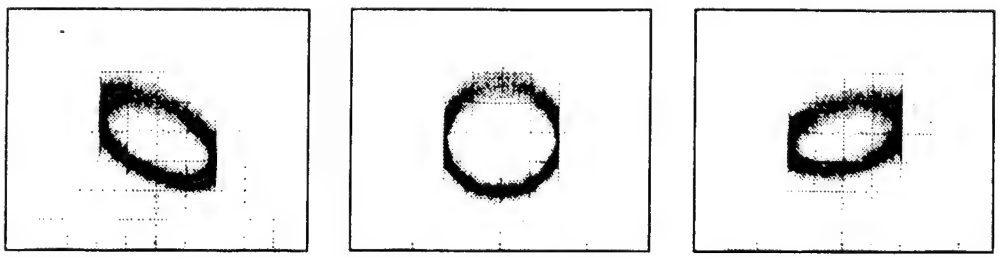


Figure 6

Réglage de gain de mise au point



Gain supérieur | Gain optimum | Gain inférieur

7. Réglage de Gain de Boucle Asservie de l'Alignement

● Objectif ● Symptôme quand déréglé	Pour optimaliser le gain de la boucle d'asservissement de l'alignement. La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées.		
● Raccordement des instruments de mesure	Voir Figure 7. [Réglages] GAN. 1 GAN. 2 50 mV/division 20 mV/division mode X-Y	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture Assemblage de carte MOTHER VR151 (TRK. GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 2 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PROGRAM, la touche PLAY ▷ , puis sur la touche PAUSE ▯▯ , dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR151 (TRK. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

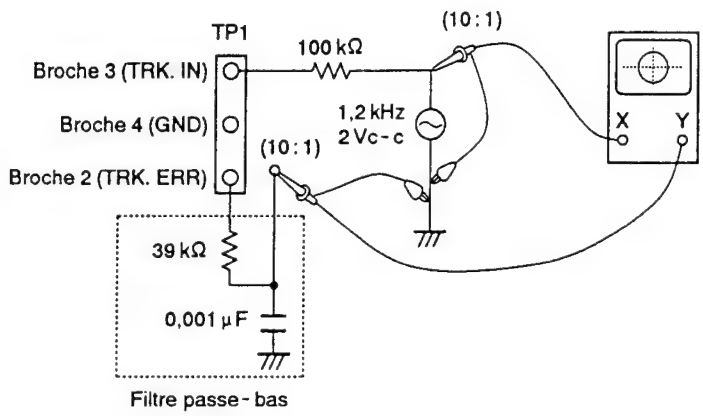
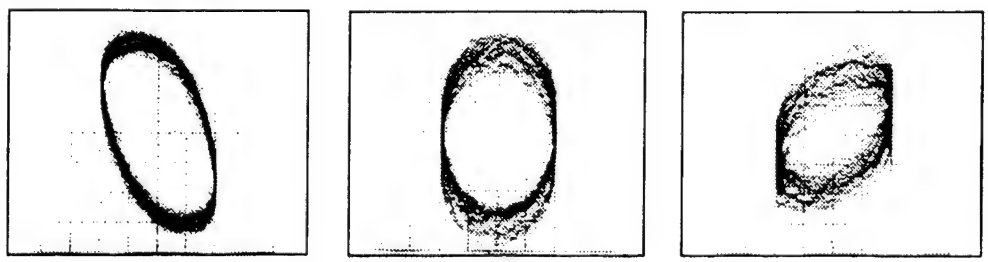


Figure 7

Réglage de gain d'alignement



Gain supérieur | Gain optimum | Gain inférieur

8. Vérification du Signal d'Erreur de la Mise au Point

● Objectif ● Symptôme quand déréglé	Pour juger si le capteur est bon ou pas, en observant le signal d'erreur de la mise au point. L'état du capteur s'évalue à partir de l'amplitude du signal d'erreur d'alignement (comme décrit dans le paragraphe relatif à l'équilibrage d'erreur d'alignement), ainsi qu'à paritir de la forme d'onde du signal d'erreur de mise au point.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR). [Réglages] 100 mV/division 5 ms/division mode CC	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode de test, arrêt Aucun YEDS-7

[Marche à suivre]

1. Raccorder TP1, broche 5 à la masse.
2. Installer le disque.
3. Tout en regardant l'écran de l'oscilloscope, appuyer sur la touche PROGRAM et observer la forme d'onde de la Figure 8, pendant quelques instants. Vérifier que l'amplitude atteint au moins 2,5 Vc-c et que les amplitudes positive et négatives soient égales. Comme la forme ne sort que pour un moment, quand la touche PROGRAM est enclenchée, appuyer sur à plusieurs reprises sur cette touche, jusqu'à ce que la forme d'onde ait été vérifiée.

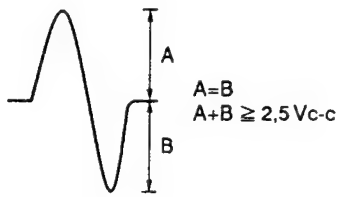


Figure 8

[Evaluation du capteur]

Ne pas tenter d'évaluer l'état du capteur tant que tous les réglages ne sont pas corrects. Les cas suivants témoignent de l'anomalie du capteur.

1. L'amplitude du signal d'erreur d'alignement est extrêmement petite (inférieure à 2 Vc-c).
2. L'amplitude du signal d'erreur de mise au point est extrêmement petite (inférieure à 2,5 Vc-c).
3. Les amplitudes positive et négative du signal d'erreur de mise au point sont extrêmement asymétriques (taux 2:1 ou plus).
4. Le signal RF est trop petit (inférieur à 0,8 Vc-c) et même si VR1 (alimentation du laser) est ajustée, le signal RF ne peut être élevé au niveau standard.

6. AJUSTES

6.1 MÉTODOS DE AJUSTE

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

● Ítemes de ajuste/verificación y orden

Paso	Ítem	Punto de prueba	Lugar de ajuste
1	Ajuste del descentramiento de enfoque	TP1, Patilla 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Ajuste de retícula	TP1, Patilla 2 (TRK. ERR)	Ranura de ajuste de retícula
3	Ajuste del equilibrio de ajuste de seguimiento	TP1, Patilla 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Ajuste de la inclinación en sentido radial / tangencial del captor	TP1, Patilla 1 (RF)	Tornillo de ajuste de la inclinación radial. Tornillo de ajuste de la inclinación tangencial
5	Ajuste del nivel de RF	TP1, Patilla 1 (RF)	VR1 (Nivel de RF)
6	Ajuste de la ganancia del bucle del servo de enfoque	TP1, Patilla 5 (FCS. IN) TP1, Patilla 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Ajuste de la ganancia del bucle del servo de seguimiento	TP1, Patilla 3 (TRK. IN) TP1, Patilla 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Verificación de la señal de error de enfoque	TP1, Patilla 6 (FCS. ERR)	————

● Tabla de abreviaturas

FCS. ERR :Error de enfoque
FCS. OFS :Descentramiento de enfoque
TRK. ERR :Error de seguimiento
TRK. BAL :Equilibrio de seguimiento
FCS. GAN :Ganacia de enfoque
TRK. GAN :Ganacia de seguimiento
FCS. IN :Entrada de enfoque
TRK. IN :Entrada de seguimiento

● Instrumentos y herramientas de medición

1. Osciloscopio de doble traza (Sonda de 10:1)
2. Oscilador de baja frecuencia
3. Disco de prueba (YEDS-7)
4. Disco de 12cm (con 70minutos de grabación por lo menos
5. Filtro de paso bajo (39 kΩ + 0,001 μF)
6. Resistor (100 kΩ)
7. Herramientas estándar

● Ubicación de los puntos de prueba y los resistores variables de ajuste

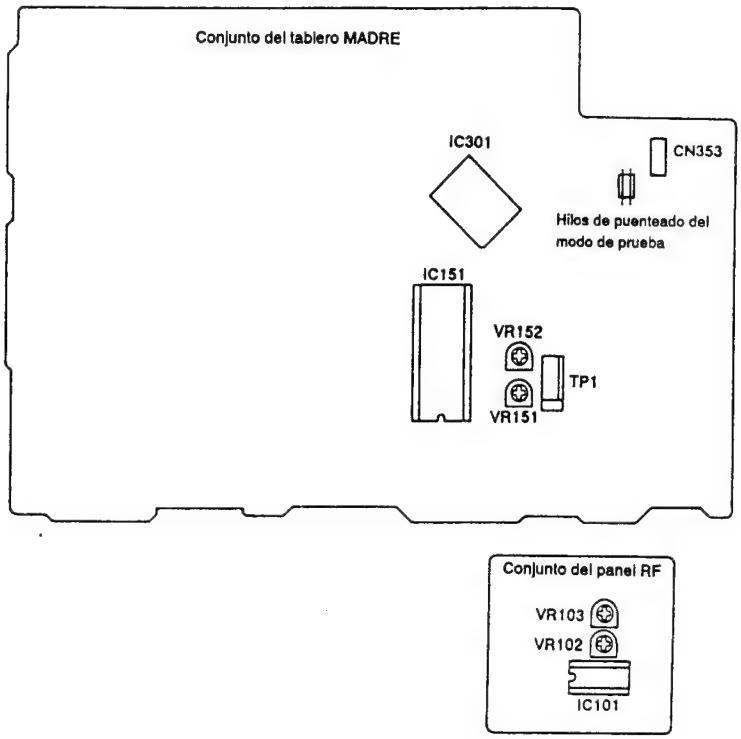


Figura 1 Lugares de ajuste

● Notas

1. Emplee una sonda de 10:1 para el osciloscopio.
2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

● Modo de prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

[Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.

1. Desenchufe el cable de alimentación de la toma de CA.
2. Cortocicuite los hilos de puenteado de modo de prueba. (Consulte la figura 1.)
3. Enchufe el cable de alimentación de la toma de CA.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siento la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.

[Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.
1. Presione la tecla STOP y cese todas las operaciones.
2. Desenchufe el cable de alimentación de la toma de CA.

[Operaciones de teclas en el modo de prueba]

Código	Nombre de la tecla	Función en el modo de prueba	Explicación
	PROGRAM	Cierre del servo de enfoque	El diodo láser se encenderá y el actuador de enfoque descenderá, después se elevará lentamente, y el servo de enfoque se cerrará en el punto en el que el objetivo se enfoque sobre el disco. Con el reproductor en este estado, si gira ligeramente con la mano el disco parado, podrá oír el sonido del servo de enfoque. Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se vera empujado hacia abajo, y después se levantará y descenderá á dos veces, y volverá a su posición original.
▷	PLAY	Activación del servo del eje	Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado. Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima. Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz lasérico incide en la sección del espejo en el la periferia del disco, ocurrirá el mismo síntoma.
□□	PAUSE	Apertura/cierre del servo de seguimiento	Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de seguimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción. Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo lasérico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema. Esta tecla es basculante de acción alternativa, y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.

Código	Nombre de la tecla	Función en el modo de prueba	Explicación
◁◁	MANUAL SEARCH REV	Retroceso del carro (hacia adentro)	Moverá la posición del captor hacia el diámetro interior del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
▷▷	MANUAL SEARCH FWD	Avance del carro (hacia afuera)	Moverá la posición del captor hacia la periferia del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
□	STOP	Parada	Desactivará todos los servos e inicializará la unidad. El captor permanecerá donde estaba cuando se presionó esta tecla.
⏏	OPEN/CLOSE	Apertura/cierre de la bandeja del disco	Abrirá/cerrará la bandeja del disco. Esta tecla es baseulante de acción alternativa y abre/cierra la bandeja alternativamente.. Si presiona esta tecla cuando el disco esté girando, lo parará, y abrira la bandeja. Esta operación de la tecla no afectará posición del captor.

[Cómo reproducir un disco en el modo de prueba]

En el modo de prueba, como los servos funcionan independientemente, la reproducción de un disco requiere el que usted emplee las teclas en el orden correcto para cerrar los servos.
A continuación se indica la secuencia de operación de teclas para reproducir un disco en el modo de prueba.

PROGRAM	Hará que se encienda el diodo láser, y cerrará el servo de enfoque.
⇩	
PLAY ▷	Pondrá en marcha el motor del eje y hará que se cierre el servo del eje.
⇩	
PAUSE ▯▯	Cerrará el servo de seguimiento.

Espere de 2 a 3 segundos por lo menos entre cada una de estas operaciones.

1. Ajuste del Descentramiento del Enfoque

● Objetivo	Ajuste de la tensión de CC para el amplificador de error de enfoque.		
● Síntomas en caso de desajuste	El reproductor no enfoca y la señal de RF contiene perturbaciones.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR) [Ajustes] 5 mV/división 10 ms/división modo de CC	● Estado del reproductor	Mode de prueba, parado (con el interruptor de alimentación en ON)
		● Lugar de ajuste	Conjunto del panel RF VR103 (FCS. OFS)
		● Disco	No es necesario

[Procedimiento]

Ajuste VR103 (FCS. OFS) de forma que la tensión de CC de TP1, patilla 6 (FCS. ERR) sea de -150 ± 50 mV.

2. Ajuste de Retícula

● Objetivo	Alineación de los puntos del haz lasárico de generación de error de seguimiento al ángulo óptimo en la pista.		
● Síntomas en caso de desajuste	La reproducción no se inicia, la búsqueda de canciones es imposible, las pistas se saltan.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla2 (TRK. ERR)a través de un filtro de paso bajo. (Consulte la figura 2) [Ajustes] 50 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto. Ranura de ajuste de retícula del captor Disco de 12 cm. (El disco YEDS-7 no podrá emplearse.)

[Procedimiento]

1. Mueva el captor hasta el la mitad del disco (R=35mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁.
2. Presione la tecla PROGRAM, y después la tecla PLAY ▷ , por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Inserte un destornillador normal en la ranura de ajuste de la retícula y ajuste la retícula hasta encontrar el punto nulo. Para más detalles, consulte la página siguiente.
4. Si gira lentamente el destornillador hacia la derecha desde el punto nulo, la amplitud de la onda aumentará gradualmente. Después, si continúa girando el destornillador, la amplitud de la onda se volverá otra vez más pequeña. Gire el distornillador hacia la derecha desde el punto nulo y ajuste la retícula al primer punto en el que la amplitud de la onda alcance su valor máximo.

   Referencia : En la figura 3 se muestra la relación entre el ángulo del haz de seguimiento con la pista y la forma de onda.

   Nota : La amplitud de la señal de error de seguimiento será de aproximadamente 3 Vp-p (cuando se emplee un filtro de paso bajo de 39 kΩ , 0,001 μF). Si la amplitud está extremadamente pequeña (2 Vp-p ó menos), es posible que el objetivo o en el captador esté funcionando mal. Si la diferencia entre la amplitud de la señal de error en el borde interior y exterior del disco es superior al 10%, la retícula no estará ajustada al punto óptimo, por lo que tendrá que volver a ajustaria.
5. Devuelva el captor hasta la mitad más o menos del disco con la tecla MANUAL SEARCH REV ◁◁, presione la tecla PAUSE ▯▯ , y vuelva a comprobar si en el panel frontal se visualizan el número de canción y el tiempo transcurrido. Si no se visualizan esta vez, o si el tiempo transcurrido cambia irregularmente, vuelva a comprobar el punto nulo y ajuste otra vez la retícula.

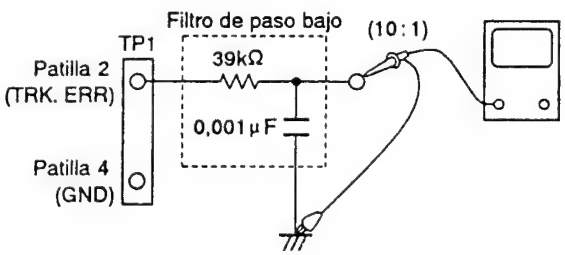
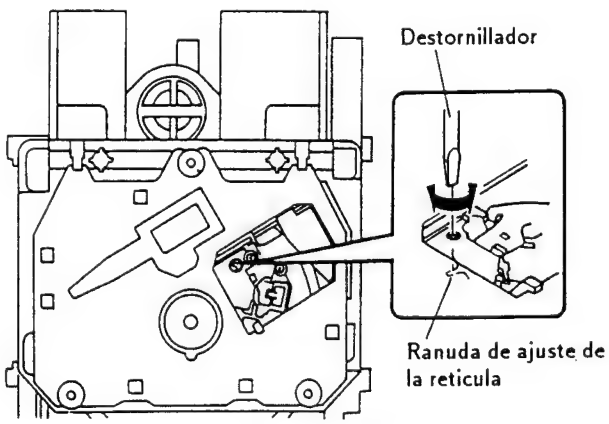


Figura 2



Lugares de ajuste

[Cómo encontrar el punto nulo]

Cuando inserte el destornillador normal en la ranura para el ajuste de la retícula y cambie el ángulo de la misma. La amplitud de la señal de error de seguimiento de TP1, patilla 2, cambiará. Dentro del margen para la retícula existen cinco o seis lugares en los que la amplitud alcanza el valor mínimo. De estos cinco o seis lugares, solamente hay uno en el que la envolvente de la forma de onda es uniforme. Este lugar es donde los tres haces lasércos divididos por la retícula se encuentran exactamente sobre la misma pista. (Consulte la figura 3.)
Este punto se denomina punto nulo. Cuando ajuste la retícula, este punto se encontrará y empleará como posición de referencia.

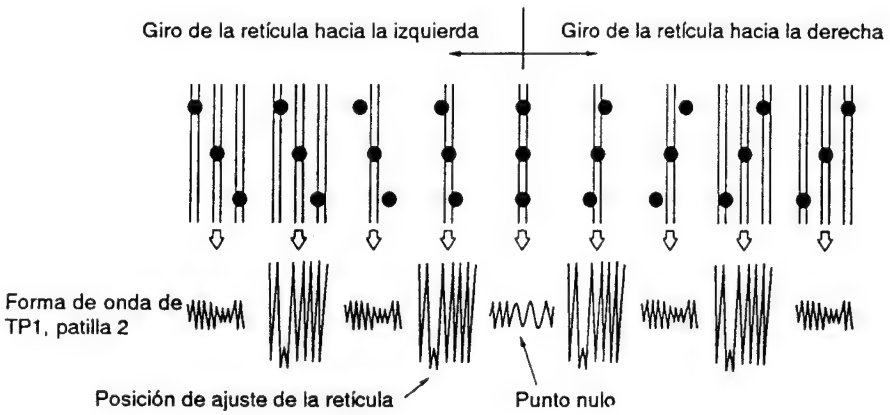
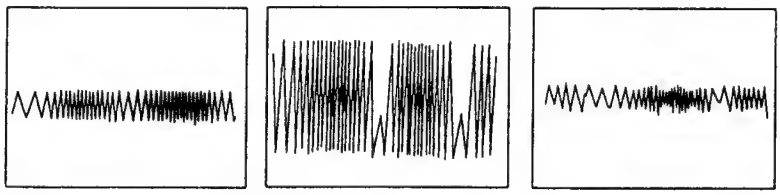


Figura 3

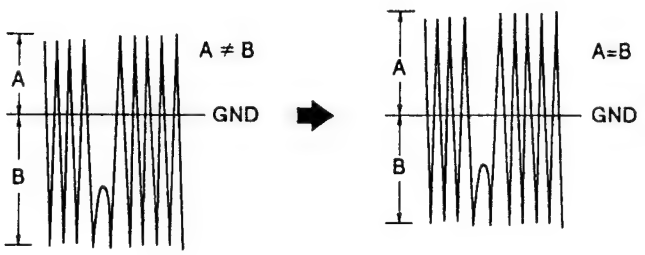


3. Ajuste del Equilibrio de Error de Seguimiento

● Objetivo	Corrección de la variación de la sensibilidad del fotodiodo de seguimiento.		
● Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 2 (TRK. ERR). Esta conexión puede realizarse a través de un filtro de paso bajo [Ajustes] 50 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto Conjunto del panel RF VR102 (TRK. BAL) YEDS-7

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁.
2. Presione la tecla PROGRAM, y después la tecla PLAY ▷ , por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Haga coincidir la línea brillante (masa) del centro de la pantalla del osciloscopio y ponga éste en el modo de CC.
4. Ajuste VR102 (TRK. BAL) de forma que la amplitud positiva y la negativa de la señal de error de seguimiento de TP1 patilla 2 (TRK. ERR) sean iguales (en otras palabras, de forma que no haya componente de CC).



Cuando hay componente de CC

Cuando no hay componente de CC

4. Ajuste de la Inclinación en Sentido Radial / Tangencial del Captor

• Objetivo	Ajustar el ángulo del captor en relación con el disco de forma que los haces lasércicos incidan perpendicularmente sobre el mismo a fin de poder leer con la mayor exactitud las señales de RF.		
• Síntomas en caso de desajuste	Sonido quebrado, algunos discos pueden reproducirse pero otros no.		
• Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1 (RF). [Ajustes] 20 mV/división 200 ns/división modo de CA	• Estado del reproductor	Modo de prueba, reproducción
		• Lugar de ajuste	Tornillo de ajuste de la inclinación radial y tornillo de ajuste de la inclinación tangencial
		• Disco	Disco de 12cm. (El disco YEDS-7 no podrá emplearse.)

[Procedimiento]

1. Para un tipo de reproducción múltiple de disco compacto, emplee la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ a fin de mover el captor hasta la mitad del disco (R=35 mm)
   Presione la tecla PROGRAM, la tecla PLAY ▷ , y después la tecla PAUSE ▯▯ , por este orden, a fin de cerrar el servo de enfoque, dispués el servo del eje, y por último para poner el reproductor en el modo de reproducción.
2. En primer lugar, gire el tornillo de ajuste de inclinación radial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad.
3. A continuación, gire el tornillo de ajuste de inclinación radial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad(Figura 5).
4. Vuelva a girar el tornillo de ajuste de inclinación radial y el tornillo de inclinación tangencial hasta que el patrón ocular pueda verse con la mayor claridad. Si es necesario, ajuste alternativamente los dos tornillos hasta que el patrón ocular pueda verse con la mayor claridad.
5. Cuando se completa el ajuste, fije los tornillos para el ajuste radial y tangencial.

Nota:Radial y tangencial significan las direcciones en relación con el disco mostrado en la figura 4.

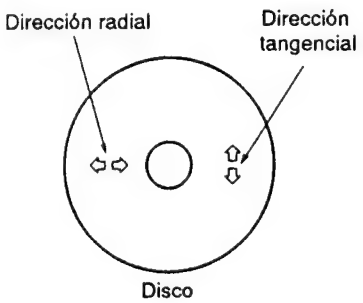
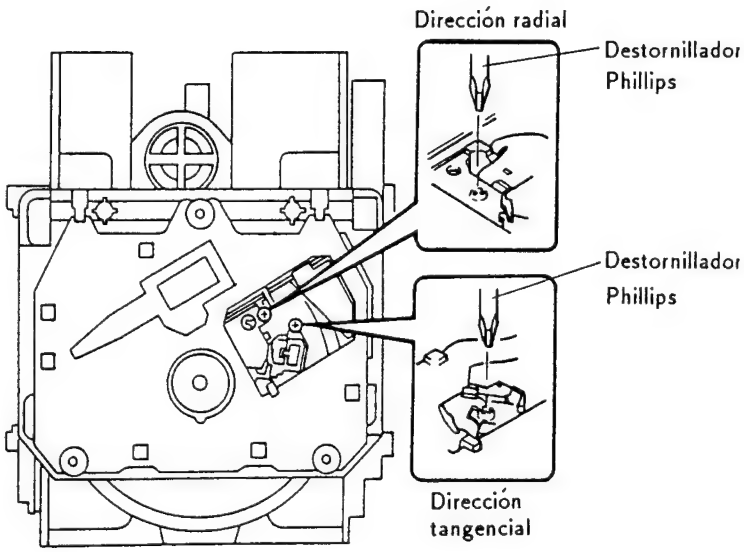


Figura 4



Lugares de ajuste

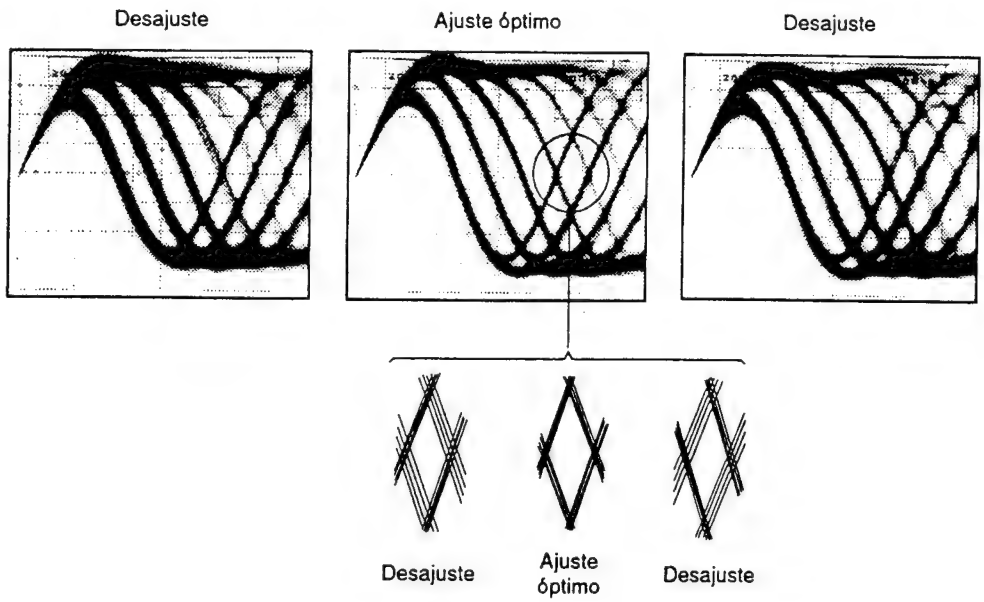


Figura 5 Patron optico

5. Ajuste del Nivel de RF

● Objetivo ● Síntomas en caso de desajuste	Optimización de la amplitud de la señal de RF de reproducción. La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1 (RF). [Ajustes] 50 mV/división 10 ms/división modo de CA	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción Conjunto del fonocaptor VR1 (potencia de láser) YEDS-7

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁, presione la tecla PROGRAM, después la tecla PLAY ▷ , por este orden a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción.
2. Ajuste VR1 (potencia de láser) de forma que la amplitud de la señal de RF sea de 1,2 Vp-p ± 0,1 V.

6. Ajuste de la Ganancia del Bucle del Servo de Enfoque

● Objetivo	Optimización de la ganancia del bucle del servo de enfoque.		
● Síntomas en caso de desajuste	La reproducción no se inicia o el actuador de enfoque produce ruido.		
● Conexión de los instrumentos de medición	Consulte la fugura 6. [Ajustes] CH1 20 mV/división CH2 5mV/división modo X-Y	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción Conjunto del tablero MADRE YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PROGRAM, la tecla PLAY ▷ , y después la tecla PAUSE ▯▯ , por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción.
3. Ajuste VR152 (FCS. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

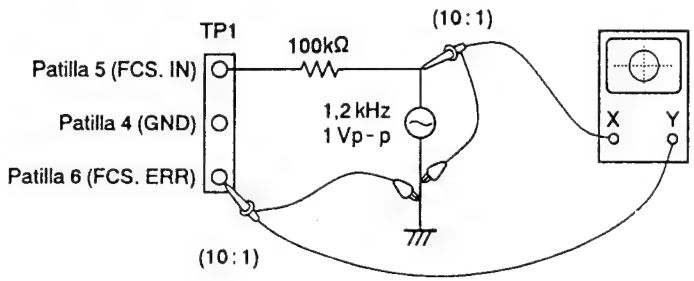
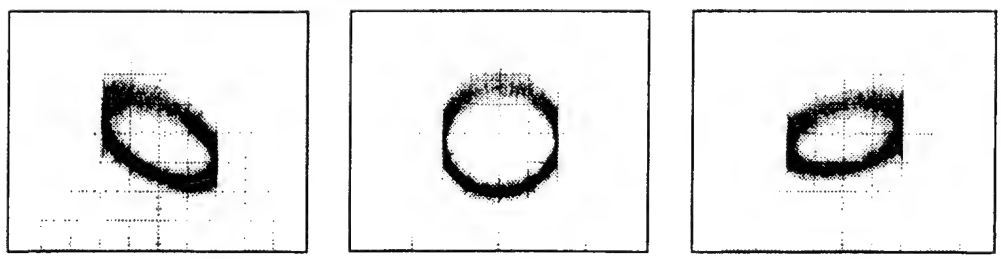


Figura 6

Ajuste de la ganancia de enfoque



Ganancia superio | Ganancia óptima | Ganancia inferior

7. Ajuste de la Ganancia del Bucle del Servo de Seguimiento

● Objetivo	Optimización de la ganancia del bucle del servo de seguimiento.		
● Síntomas en caso de desajuste	La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas.		
● Conexión de los instrumentos de medición	Consulte la figura 7. [Ajustes] CH1 CH2 50 mV/división 20 mV/división modo X - Y	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción Conjunto del tablero MADRE VR151(TRK. GAN) YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 2 Vp-p.
2. Presione la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PROGRAM, la tecla PLAY ▷ , y la tecla PAUSE ▯▯ , por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción.
3. Ajuste VR151 (TRK. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

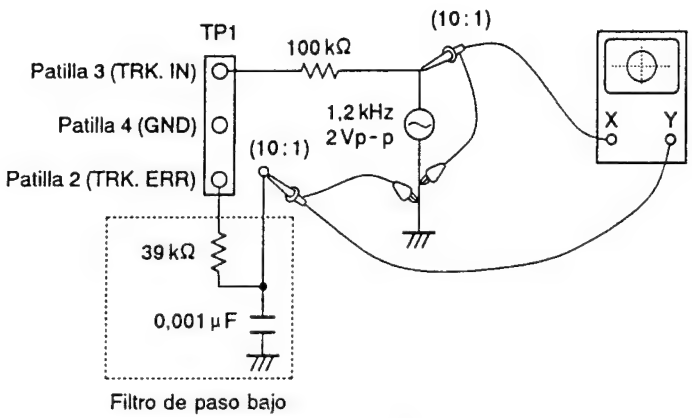


Figura 7

Ajuste de la ganancia de seguimiento

Ganancia superior | Ganancia óptima | Ganancia inferior

8. Verificación de la Señal de Error de Enfoque (Curva S de Enfoque)

● Objetivo ● Síntomas en caso de desajuste	Juzgar si el captor est'a bien o no observando la señal de error de enfoque. El captor se juzga por la amplitud de la señal de error de seguimiento (como se ha indicado en la sección sobre el ajuste del equilibrio de error de seguimiento) y la forma de onda de la señal de error de enfoque.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR). [Ajustes] 100 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, parada Ninguno YEDS-7

[Precedimiento]

1. Conecte TP1, patilla 5, a masa.
2. Coloque el disco.
3. Contemplando la pantalla del osciloscopio, presione la tecla PROGRAM y observe durante un momento la forma de onda de la figura 8. Verifique si la amplitud es de 2,5 Vp-p por lo menos y si la amplitud de las partes positiva y negativa son iguales. Como la forma de onda solamente sale durante un momento cuando se presiona la tecla PROGRAM, presione una y otra vez esta tecla hasta que logre comprobar la forma de onda.

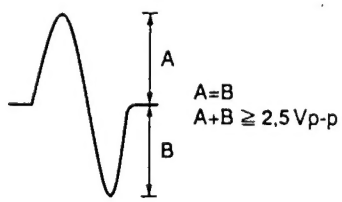


Figura 8

[Juicio sobre el captor]

No juzgue el captor hasta haber finalizado correctamente todos los ajustes. En los casos siguiented es posible que haya algo erróneo en el captor.

1. La amplitud de la señal de error de seguimiento es extremadamente pequeña (menos de 2 Vp-p).
2. La amplitud de la señal de error de enfoque es extremadamente pequeña (menos de 2,5 Vp-p).
3. Las amplitudes de las partes positiva y negativa de la señal de error de enfoque son extremadamente asimétricas (relación de 2:1 o superior).
4. La señal de RF es demasiado pequeña (menos de 0,8 Vp-p) y aunque se ajuste VR1 (potencia de láser), la señal de RF no puede aumentarse hasta el nivel estándar.

7. FOR PD–S801/KC, HEM, HB, SD AND PD–S801–G/HEM TYPES

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

PD–S801/KC, HEM, HB, SD, PD–S801–G/HEM AND PD–52/KU have the same construction except for the following:

Mark	Symbol & Description	Part No.						Remarks
		PD-52/ KU	PD-S801/ KC	PD-S801/ HEM	PD-S801/ HB	PD-S801/ SD	PD-S801-G/ HEM	
⊙	Mother board assembly	PWM1628	PWM1628	PWM1629	PWM1629	PWM1628	PWM1629	
⊙	Analog board assembly	PWM1632	PWM1632	PWM1633	PWM1633	PWM1634	PWM1633	
NSP	├ Audio board assembly	PWZ2362	PWZ2362	PWZ2365	PWZ2365	PWZ2368	PWZ2365	
NSP	├ Servo trans board assembly	PWZ2363	PWZ2363	PWZ2366	PWZ2366	PWZ2369	PWZ2366	
NSP	└ Audio trans board assembly	PWZ2364	PWZ2364	PWZ2367	PWZ2367	PWZ2370	PWZ2367	
⚠	Strain relief	CM – 22C	CM – 22C	CM – 22B	CM – 22B	CM – 22B	CM – 22B	
⚠	AC power cord	PDG1015	PDG1015	PDG1003	PDG1036	PDG1013	PDG1003	
⚠	Power transformer/10W (AC120V)	PTT1269	PTT1269	.....	.....	.....	.....	
⚠	Power transformer/8W (AC120V)	PTT1270	PTT1270	.....	.....	.....	.....	
⚠	Power transformer/11W (AC220 – 230/230 – 240V)	.....	.....	PTT1242	PTT1242	.....	PTT1242	
⚠	Power transformer (AC220 – 230/230 – 240V)	.....	.....	PTT1245	PTT1245	.....	PTT1245	
⚠	Power transformer/11W (AC110/120 – 127/220/240V)	.....	.....	.....	.....	PTT1243	.....	
⚠	Power transformer (AC110/120 – 127/220/240V)	.....	.....	.....	.....	PTT1246	.....	
⚠	Voltage selector (AC110/120 – 127/220/240V)	.....	.....	.....	.....	PSB1002	.....	
	Name plate	AAM1001	PAM1509	PAM1509	PAM1509	PAM1509	PAN1262	
	Screw	PBA1071	.....	.....	.....	.....	.....	
	Front panel assembly	PEA1212	PEA1200	PEA1200	PEA1200	PEA1200	PEA1241	
	Side spacer	PEB1217	.....	.....	.....	.....	.....	
	Side sheet	PNM1187	.....	.....	.....	.....	.....	
	Control panel	PNW2175	PNW2156	PNW2156	PNW2156	PNW2156	PNW2178	
	Panel stabilizer	PNW2179	.....	.....	.....	.....	.....	
	Display window	PAM1576	PAM1576	PAM1570	PAM1570	PAM1576	PAM1570	
NSP	Front panel	PAN1247	PAN1240	PAN1240	PAN1240	PAN1240	PAN1248	
NSP	Rear base	PNA1834	PNA1835	PNA1797	PNA1833	PNA1836	PNA1837	
	Styrol protector F	PHA1204	PHA1163	PHA1163	PHA1163	PHA1163	PHA1163	
	CD Packing case	PHG1805	PHG1806	PHG1783	PHG1783	PHG1783	PHG1807	
	Cord with plug (mini plug)	PDE – 319	PDE – 319	.....	.....	PDE – 319	.....	
	Operating instructions (English)	PRB1170	.....	.....	PRB1171	PRB1171	.....	
	Operating instructions (English/French)	.....	PRE1157	PRE1157	.....	.....	PRE1157	
	Operating instructions (German/Italian/ Dutch/Swedish/Spanish/Portuguese)	.....	.....	PRF1055	.....	.....	PRF1055	

Mark	Symbol & Description	Part No.						Remarks
		PD-52/ KU	PD-S801/ KC	PD-S801/ HEM	PD-S801/ HB	PD-S801/ SD	PD-S801-G/ HEM	
	Power button	PAC1658	PAC1658	PAC1658	PAC1658	PAC1658	PAC1675	
	Play button	PAC1659	PAC1659	PAC1659	PAC1659	PAC1659	PAC1676	
	Out put button	PAC1661	PAC1661	PAC1661	PAC1661	PAC1661	PAC1677	
	Tray name plate	PNW1949	PNW1949	PNW1949	PNW1949	PNW1949	PNW2177	
	Bonnet	PYY1148	PYY1148	PYY1148	PYY1148	PYY1148	PYY1165	
	Wireless remote control unit	PWW1072	PWW1072	PWW1072	PWW1072	PWW1072	PWW1075	
	Battery lid	PZN1001	PZN1001	PZN1001	PZN1001	PZN1001	PZN1011	

MOTHER BOARD ASSEMBLY

PWM1629 and PWM1628 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		PWM1628	PWM1629	
	D391 – 394	1SS254	.....	
	L391, 392 Axial indnctor	LAU010K	.....	
	R392	RD1/6PM102J	.....	
	R391	RD1/6PM244J	.....	
	JA391, 392	PKN1004	.....	

AUDIO BOARD ASSEMBLY

Although PWZ2365, PWZ2368 and PWZ2362 are different in part number, they have the same service parts.

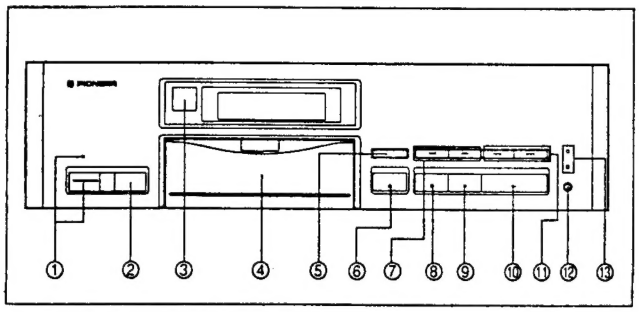
SERVO TRANS BOARD ASSEMBLY

Although PWZ2366, PWZ2369 and PWZ2363 are different in part number, they have the same service parts.

AUDIO TRANS BOARD ASSEMBLY

Although PWZ2367, PWZ2370 and PWZ2364 are different in part number, they have the same service parts.

8. PANEL FACILITIES



FRONT PANEL

① POWER STANDBY/ON switch and STANDBY indicator
② DISPLAY OFF button
③ Remote sensor
Receives the signal from the remote control unit.
④ Disc tray
⑤ TIME button
⑥ OPEN/CLOSE button (⏏)
⑦ Manual search buttons (◄◄/►►)
⑧ Stop button (■)
⑨ Pause button (II)
⑩ Play button (►)
⑪ Track search buttons (I◄◄/►►I)
⑫ OUTPUT SELECTOR button
⑬ DIGITAL/ANALOG output indicators

9. SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system
Power requirements ..... AC 120 V, 60 Hz
Power consumption 18W
Operating temperature ..... +5°C - +35°C
+41°F - +95°F
Weight ..... 5.0 kg (11 lb)
External dimensions ..... 440(W) X 276(D) X 135(H) mm
17-5/16(W) X 10-7/8(D) X 5-5/16(H) in

2. Audio section

Frequency response ..... 2 Hz - 20 kHz
S/N ratio ..... 110 dB or more (EIAJ)
Dynamic range ..... 98 dB or more (EIAJ)
Harmonic distortion ..... 0.0021% or less (EIAJ)
Output voltage ..... 2.0 V
Wow and flutter ..... Limit of measurement
(±0.001% W.PEAK) or less (EIAJ)
Channels ..... 2-channel (stereo)

3. Output terminal

Audio line output jacks (FIXED)
Control input/output jacks
Optical digital output jacks
CD-DECK SYNCHRO jack

4. Functions

Basic operation buttons
- PLAY, PAUSE, STOP

Search function
- Direct play
- Track search
- Manual search
- Index search

Programming
- Maximum 24 steps
- Pause
- Program check/correction
- Program clear (single track or all tracks)

Repeat functions
- 1 track repeat
- All tracks repeat
- Program play repeat
- Random play repeat

Random play (repeat also available)
Switching display
Time consumed, remaining time (track/disc), and total time
Display off function
Timer start
Peak search
Compu/Auto program editing
Selects the tracks within the specified time.
Time fade editing

5. Accessories

- Remote control unit 1
- Size AAA/R03/dry batteries 2
- Control cord 1
- Output cable 1
- Operating instructions 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.